

DIV. OF FISHES

Mus

COMMERCIAL FISHERIES REVIEW

JAN 04 1966

MUSEUMS
LIBRARY



VOL. 24 NO.11

NOVEMBER 1962

FISH and WILDLIFE SERVICE
United States Department of the Interior
Washington, D.C.

A
Fishe

F
respo

A
refer

U
Budge

Page
1 .

12 .

Page

17 .

17

18 .

21 .

21 .

22 .

22 .

22 .

23 .

24 .

24 .

25 .



COMMERCIAL FISHERIES REVIEW



A review of developments and news of the fishery industries
prepared in the BUREAU OF COMMERCIAL FISHERIES.

Joseph Pileggi, Editor

Address correspondence and requests to the: Chief, Branch of Market News, Bureau of Commercial Fisheries, U. S. Department of the Interior, Washington 25, D. C.

Publication of material from sources outside the Bureau is not an endorsement. The Bureau is not responsible for the accuracy of facts, views, or opinions contained in material from outside sources.

Although the contents of the publication have not been copyrighted and may be reprinted freely, reference to the source is appreciated.

Use of funds for printing this publication has been approved by the Director of the Bureau of the Budget, May 10, 1960.

5/31/63

CONTENTS

COVER: Part of the Capetown fleet engaged in the South African spiny lobster fishery. Most of the vessels are of wood, 50 to 60 feet long. Each vessel carries 4 to 6 wooden dinghies and a crew of 12 to 16 men. The Republic of South Africa's annual production of spiny lobster tails is about 7 million pounds. (See p. 12 of this issue.)

- | | |
|------|---|
| Page | |
| 1 | Progress Report on Midwater Trawling Studies Carried Out off the New England Coast in 1961 by M/V Delaware, by Warren F. Rathjen and L. A. Fahlen |
| 12 | The Stockfish and Spiny Lobster Fisheries of South Africa, by Albert C. Jensen |

- | | |
|--------------------------|--|
| Page | |
| TRENDS AND DEVELOPMENTS: | |
| Alaska: | |
| 17 | Court Ruling Allows Alaska to Tax Freezer-ships Operating in Bristol Bay |
| | Alaska Fisheries Exploration and Gear Research: |
| 17 | Stocks of King Crabs Located near Kodiak California: |
| 18 | Pelagic Fish Population Survey Continued |
| 21 | Midwater Trawling for Salmon Fingerlings Continued |
| 21 | Annual Salmon Spawning Survey Started |
| 22 | Cans--Shipments for Fishery Products, January-July 1962 |
| | Central Pacific Fisheries Investigations: |
| 22 | First Raft Expedition to Study Fish Behavior near Ocean Flotsam |
| 22 | Machine Tabulating Equipment Used to Analyze Cruise Observations |
| | Fishy Odors and Flavors: |
| 23 | Contract Study Completed |
| | Great Lakes Fishery Investigations: |
| 24 | Lake Trout Distribution Studies in Western Lake Superior Continued |
| | Gulf Exploratory Fishery Program: |
| 24 | Shrimp Marking Study in Gulf of Mexico Continued |
| 25 | Clam and Scallop Distribution in Northwestern Gulf of Mexico Studied |

- | | |
|---|--|
| Page | |
| TRENDS AND DEVELOPMENTS (Contd.): | |
| Gulf Fishery Investigations: | |
| 26 | Shrimp Distribution Studies |
| Industrial Fishery Products: | |
| 28 | U. S. Fish Meal and Solubles, Production and Imports, Jan.-Aug. 1962 |
| | U. S. Fish Meal, Oil, and Solubles: |
| 28 | Production, August 1962 |
| 29 | Major Indicators for U. S. Supply, September 1962 |
| Nautical Charts: | |
| 30 | Folded Intracoastal Charts for Small Craft Navigation |
| North Atlantic Fisheries Exploration and Gear Research: | |
| 31 | Otter-Trawl Net with Electric Field Tested |
| 32 | Commercial Fishing Potential of Ocean Perch off Nova Scotia Studied |
| North Atlantic Fisheries Investigations: | |
| 33 | Distribution and Abundance Studies of Sea Scallops on Georges Bank Continued |
| 34 | Fluke Tagging Experiment |
| North Pacific Exploratory Fishery Program: | |
| 34 | Oceanic Fish Survey and Midwater Trawl Tests off Pacific Northwest and California Coasts Continued |
| 36 | Shrimp Distribution off Vancouver Island Studied |

CONTENTS (CONTINUED)

Page	TRENDS AND DEVELOPMENTS (Contd.):	Page	TRENDS AND DEVELOPMENTS (Contd.):
	Oceanography:		Wholesale Prices:
36 ..	New Coast and Geodetic Survey Research Vessels <u>Peirce</u> and <u>Whiting</u>	52 ..	Edible Fish and Shellfish, September 1962
37 ..	New Oceanographic Research Vessel near Completion		FOREIGN:
	Oregon:		International:
38 ..	Fish Passage Projects of New Salmon Rehabilitation Program Completed	54 ..	Tuna:
39 ..	Obstacle to Oceanbound Migrant Salmon Removed		U. S. Interior Department Officials Participate in United States-Japan Conference in Tokyo
39 ..	Public Hearing Held on Dungeness Crab Fishing Regulations		General Agreement on Tariffs and Trade: Effects of Nontariff Measures on Fishery Trade Studied
	Oysters:	54 ..	European Free Trade Association: Norway Cuts Tariffs on Imports from Other EFTA Countries
39 ..	Long Island Sound Observations on Spawning and Setting as of September 19, 1962	56 ..	Food and Agriculture Organization: Fishing Methods and Gear Seminar and Study Tour in U.S.S.R.
40 ..	Maryland Observations on Spawning and Setting as of September 18, 1962	56 ..	Recommendations Made at World Scientific Meeting on Biology of Sardines Being Carried Out
41 ..	Poor Crop of James River Seed Oysters Predicted After Setting Failure	57 ..	International Labor Organization: Work Conditions of Commercial Fishermen Reviewed
	Pollution:	58 ..	UNESCO Intergovernmental Oceanographic Commission: Second Session Held in Paris
41 ..	New Laboratory to Study Salt-Water Quality Standards	59 ..	Working Group Plans Programs for Tropical Atlantic Investigations
41 ..	New Laboratory to Study Fresh-Water Quality Standards	60 ..	Coordination Group on the International Cooperative Investigations of the Tropical Atlantic Meets
42 ..	Scientific Vessel Conducts Water Pollution Control Research in Lake Michigan		Fish Meal:
	Refrigerated Sea Water:	60 ..	World Production, July 1962
42 ..	Refrigerated Sea Water Tank Installed in Ocean Perch Fishing Vessel		Belgium:
	Shrimp:	60 ..	Japanese Canned Tuna Prices, Mid-September 1962
42 ..	United States Shrimp Supply Indicators, September 1962	60 ..	Frozen Fish Market
	South Atlantic Exploratory Fishery Program:		Brazil:
43 ..	Royal-Red Shrimp and Calico Scallop Explorations off Florida's East Coast	61 ..	Fisheries Trends, August 1962
	South Carolina:		Canada:
45 ..	Fisheries Biological Research Progress, July-September 1962	61 ..	West Coast Vessels Enter Tuna Fishery off Southern California and Mexico
	Standards:	61 ..	British Columbia's Record Pack of Canned Pink Salmon
46 ..	Voluntary Standards and Inspection Program for Fishery Products	62 ..	Government Liberalizes Fishing Vessel Subsidy Regulations by Dropping Vessel Replacement Provision
	Transportation:		Colombia:
46 ..	Selected Ocean Freight Rates for Certain Fishery Products	62 ..	National Fishing Exposition to be Held November 20-30, 1962
	Tuna:		Cuba:
46 ..	Production and Marketing Problems Discussed at Second Japan-United States Conference	62 ..	Fishing Port to be Built by Soviets
47 ..	Proposed Japanese-United States Tuna Venture in California	63 ..	Soviet-Bloc Fishery Technicians in Cuba
47 ..	Bureau of Commercial Fisheries Tuna Forecasting and Behavior Programs		Denmark:
	U. S. Fishing Vessels:	63 ..	Fish Fillets and Blocks and Fishery Industrial Products Exports, July 1962
48 ..	Fisheries Loan Fund and Other Financial Aid for Vessels, July 1-September 30, 1962	63 ..	To Manufacture Food for Rainbow Trout Growers
48 ..	First Fishing Vessel Construction with Aid of Government Subsidy	64 ..	Fisheries Trends, January-June, 1962
	U. S. Foreign Trade:	66 ..	Fisheries Trends, Early September 1962
	Edible Fishery Products:		German Federal Republic:
48 ..	July 1962	67 ..	Japanese Canned Tuna Prices
49 ..	August 1962		Greece:
	Airborne Imports of Fishery Products:	67 ..	New Mechanical Device for Hauling in Purse-Seine Nets Invented by Shipowner
50 ..	January-May 1962		
50 ..	January-June 1962		
	Virginia:		
51 ..	Study of Effects of Man-Made Wastes on Marine Animals		

Contents continued page III.

CONTENTS (CONTINUED)

Page		Page	
	FOREIGN (Contd.):		FOREIGN (Contd.):
	Greece (Contd.):		Mexico:
67 ..	Freezer-Trawler Fleet Expanded	80 ..	West Coast 1962/63 Shrimp Fishing Season Delayed by Vessel Tie-Up
68 ..	New Fish Cannery to be Built		Portugal:
	Guatemala:	81 ..	Canned Fish Exports, January-June 1962
68 ..	Joint Japanese-Guatemala Firm Fishing Shrimp off Central America	82 ..	Canned Fish Pack, January-June 1962
	Iceland:	82 ..	Modern Fishing Base Planned
68 ..	Fisheries Trends, Early September 1962		South Africa Republic:
68 ..	Seeks U. S. Loan to Aid Fish-Processing Plants	82 ..	Plans to Extend Territorial Fishing Limits to 12 Miles
69 ..	Exports of Fishery Products, January-July 1962		Switzerland:
69 ..	Utilization of Fishery Landings, January- May 1962	83 ..	Japanese Canned Tuna Prices, Mid-September 1962
70 ..	Fishery Landings by Principal Species, January-May 1962		Saudi Arabia:
	Japan:	83 ..	Authorizes Import of Japanese Canned Saury
70 ..	Tenth Sale of Canned Tuna in Brine for Ex- port to the U. S.		United Kingdom:
70 ..	Packers Seek Removal of Restrictions on U. S. Imports of Canned Tuna	83 ..	Fishery Loans Interest Rates Revised
70 ..	Canned Tuna Industry Trends, August 1962		Venezuela:
71 ..	Claims Mount Against Japanese Frozen Yellowfin Tuna Exports to the United States	83 ..	Japanese Fishing Firm not Able to Rotate Tuna Technicians in Venezuela
71 ..	Sluggish Frozen Tuna Market Causes Concern		FEDERAL ACTIONS:
72 ..	Second Japan-United States Tuna Meeting as Reported by Japanese		Department of Commerce:
72 ..	Regulations on Landing and Transfer of Tuna Catches Relaxed by Japanese Government		Area Redevelopment Administration:
73 ..	Frozen Tuna Exports to Europe and Africa, April-July 1962	85 ..	Industrial Loan to Maine Fishery Firm Approved
73 ..	Direct Frozen Tuna Exports from Atlantic Tuna Vessels to European and African Countries, 1961	85 ..	Industrial Loan to Washington Oyster Firm Approved
73 ..	One District to Expand Skipjack Tuna Fishery		Department of Health, Education and Welfare:
73 ..	Tuna Landings by Species, 1955-61		Food and Drug Administration:
73 ..	Tuna Fishing Forecast for Pacific Ocean, September 1962	86 ..	Canned Tuna Labels Must Say "Light" or "Dark"
74 ..	Another Firm to Start American Samoan Fishing Operations in January 1963	86 ..	Use of Hydrogenated Sperm Oil Permitted as Food Additive
74 ..	Tuna Vessel Demonstrates Efficiency of Power Block		Department of the Interior:
75 ..	Tuna Industry Trends		Fish and Wildlife Service:
75 ..	Views on North Pacific Halibut Research		Bureau of Commercial Fisheries:
78 ..	Frozen Swordfish Exports to United States	87 ..	Proposed Yellowfin Tuna Conservation Regulations for Eastern Pacific
78 ..	Frozen Octopus Exports to U. S. and Canada		Department of the Treasury:
78 ..	Fish Meal Factoryship to Operate off Angola		Coast Guard:
78 ..	Transistorized Depth-Finder Developed by Japanese Firm	92 ..	Plans for Full-Time Fisheries Patrol Ves- sel for Georges Bank
79 ..	Stern Trawler Launched	92 ..	Eighty-Seventh Congress (Second Session) Adjourns
79 ..	Considers Russian Trawl Fishing Methods in Gulf of Alaska Outdated		FISHERY INDICATORS:
79 ..	More Japanese Views on Second United States-Japan Tuna Meeting	100 ..	Chart 1 - Fishery Landings for Selected States
	Kuwait:	101 ..	Chart 2 - Landings for Selected Fisheries
80 ..	Shrimp Producing Potential Surveyed by United States Firm	102 ..	Chart 3 - Cold-Storage Holdings and Freezings of Fishery Products
		103 ..	Chart 4 - Receipts and Cold-Storage Holdings of Fishery Products at Principal Distribution Centers
		103 ..	Chart 5 - Fish Meal and Oil Production - U. S. and Alaska
		104 ..	Chart 6 - Canned Packs of Selected Fishery Products
		105 ..	Chart 7 - U. S. Fishery Products Imports
			RECENT FISHERY PUBLICATIONS:
		106 ..	Fish and Wildlife Service Publications
		108 ..	Miscellaneous Publications



Nov

PR
OU

and
fish
uat
kno
dep
mor

off
the

hav
tors
ing

mer
ing
McI
has

Con
plac
a la
mer
sup
*Fish
Cic
1/4" M
1

COMMERCIAL FISHERIES REVIEW

November 1962

Washington 25, D. C.

Vol. 24, No. 11

PROGRESS REPORT ON MIDWATER TRAWLING STUDIES CARRIED OUT OFF THE NEW ENGLAND COAST IN 1961 BY M/V DELAWARE

By Warren F. Rathjen* and L. A. Fahlen*

ABSTRACT

Experiments with midwater trawling gear were conducted in 1961 by the U. S. Bureau of Commercial Fisheries with the research vessel Delaware. The principal objective of work in 1961 was to modify midwater trawling gear so that it could be controlled accurately. A depth sounder transducer was mounted on the headrope of a trawl to allow a constant check to be made on the relation of the net to the bottom and to fish schools. In limited fishing trials, carried out with the transducer-equipped net, over 25 species of marine animals were sampled. Atlantic herring were caught in amounts up to 4,500 pounds per tow. Other commercially-desirable species taken included whiting (silver hake), mackerel, and butterfish. The midwater gear experiments and explorations are scheduled to continue.

INTRODUCTION

Widespread interest has developed and been maintained during the past decade in finding and using various fishery resources known to occur in mid-depths of the oceans.^{1/} Ordinary fishing techniques, such as seining and trawling, are for the most part applicable only in situations where the fish sought can be seen from the vessel or the air (as in seining) or are known to be close to or on the bottom (as in otter trawling). Some fish occurring in mid-depths have been harvested by gill nets, traps, long lines, and a few other types of gear, but more versatile gear for the midwater depths has long been needed.

Recent encouraging catches of fish by midwater trawls in the northeastern Pacific and off northern Europe have aroused interest in possible uses for this gear in other areas of the world, including the waters off the northeastern states of the United States.

Several workers (including Parrish 1959, Schaefers and Powell 1958, and Steltner 1961) have stressed that development of midwater trawling techniques depends largely on two factors: (1) finding the fish, or other marine life, in the mid-depths; and (2) controlling the fishing depth of the gear.

Finding concentrations of marine animals has been made less difficult by the development and use of sonic fish-finding devices (Kristjonsson 1959); and several ways of positioning the trawl in the proper depth have been developed in the past several years (Smith 1957, McNeeley 1958). But a means of controlling the trawl so that it stays in the desired depths has only been developed recently (Scharfe 1960).

The studies under discussion here were started early in 1961 by the U. S. Bureau of Commercial Fisheries. Principal immediate objective was to obtain gear that could be placed in position and controlled readily. The experiments were designed, also, as part of a larger-scale study having the ultimate objective of establishing the availability, to commercial fishermen, of stocks of fish or invertebrates (shrimp and other animals) capable of supporting fisheries off the northeastern United States.

*Fishery Methods and Equipment Specialists, Exploratory Fishing and Gear Research Base, U. S. Bureau of Commercial Fisheries, Gloucester, Mass.

^{1/}"Mid-depths" and "mid-depths resources"--also "midwater" and "midwater resources"--are terms used in this report to denote all layers and resources of the sea from just below the sea surface to immediately above the sea bottom.

BACKGROUND

Several years ago Barraclough and Johnson (1956, 1960) developed a one-vessel mid-water trawl that proved successful in British Columbia waters. Schaefer and Powell (1958) used similar trawls and controlled their position in the water with a Bureau-designed depth indication device (McNeely 1958).

More recent developments in midwater gear design have come from European experiments described by Scharfe (1960). Scharfe mounted a depth-sounder transducer on the head-rope of the trawl to aid in orienting the gear during tows. This and other techniques have since been modified and used successfully in Bureau studies in the Gulf of Mexico (Bullis 1961).

Off the New England coast, various approaches to one-vessel midwater trawling have been attempted from time to time. Single-vessel trawls were used by the Bureau as sampling gear as early as 1956 in herring surveys off Maine, and a few early attempts were made by the Bureau to develop a controllable trawl for use with commercial draggers. The attempts were terminated, however, owing to the lack of proper instrumentation, time, and facilities at that time.

COVERAGE

In 1961, primary effort was devoted toward obtaining and adapting gear and establishing techniques to be used in a long-term effort aimed at defining midwater resources. Four cruises by the Delaware were carried out (table 1) with main stress on adapting suitable mid-water trawls and gaining familiarity with fish-finding techniques (U. S. Fish and Wildlife Service 1961a, b, c, e). Secondary effort was devoted to supplementary sampling techniques, i. e., night-light collections and gill-net sampling.

Table 1 - Midwater Trawl Cruises of the M/V Delaware, 1961

Cruise No.	Area	Date	No. of Sea Days	Midwater Trawl Tows	Average Time Per Tow	Principal Species Represented in Catches
61-1	Nantucket Light Vessel - Hudson Canyon	Jan. 23-Feb. 2, 1961	11	8	60 minutes	Silver hake, butterfish, scup, spiny dogfish, Atlantic mackerel
61-8	Gulf of Maine - N. Georges Bank	May 24 - June 7, 1961	8	16	60 minutes	Herring, mackerel, silver hake
61-11	Gulf of Maine and Georges Bank	July 6-14, 1961	9	10	60 minutes	Spiny dogfish, Atlantic herring, silver hake, butterfish, Atlantic mackerel, alewife
61-18	Gulf of Maine - Georges Bank - Nantucket Shoals	Oct. 10-18, 1961	9	6	90 minutes	Haddock (young of year), silver hake, butterfish, herring, dogfish, shrimp

During the four cruises, the midwater trawl gear was set only 40 times. Two additional sets with the gear were made on a herring survey cruise (Delaware 61-15) near Mt. Desert Island off the coast of Maine (U. S. Fish and Wildlife Service 1961d).

METHODS AND MATERIALS

Early in 1961, limited trials were made with a standard No. 36 eastern otter trawl of 2½-inch-mesh webbing. To allow for an extension or underhang in the lower leading portion of the net, the trawl was fished upside down with 50 floats on what would otherwise have been the footrope. Also used in a few early trials was a 40-foot square "sampling net" made of 5-inch-mesh webbing. Both trawls were fished with 14-fathom legs and 3½- by 6½-foot bracket doors. Trawl depth was determined, roughly, from a curve of vessel speed and tow warp

length that was obtained in gear trials, with a vessel riding over the towed net recording the depth of the trawl headrope at varying speeds and with varying lengths of wire out. (This technique has been described by Scharfe.)

Results from these early trials made it obvious that more elaborate gear and equipment was necessary. In particular, gear was needed that could be controlled accurately, and equipment was needed that would allow such control and give a constant reading on (1) net depth and (2) relation of the net to the bottom and to fish schools. The European gear and equipment described by Scharfe (1960) appeared to fulfill these requirements. Trials of comparable gear were witnessed in the Gulf of Mexico, and soon after, similar gear was obtained for use with the Delaware.

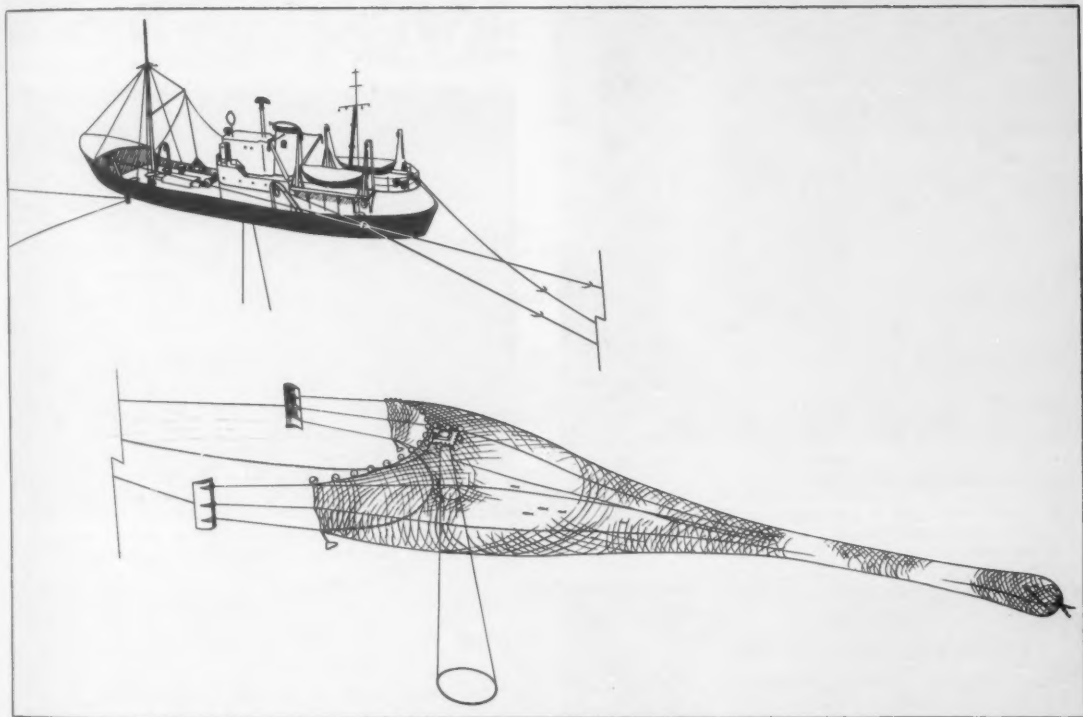


Fig. 1 - Diagram illustrating the midwater trawling system used during 1961 Delaware pelagic explorations. A transducer is mounted on the net and connected to the vessel through a net transducer cable. The approximate vertical and horizontal fields of the echosounding and echo-ranging equipment are shown.

The complete system (fig. 1) consists of the net, doors, legs, warp, depth-recorder, and 2 transducers--one mounted on the headrope of the net and connected to the vessel by means of a conductor cable and the other mounted in the vessel hull.

THE NET: The net is a modification of that described by Scharfe. It is built on a 2-seam design, of nylon webbing graded from 6-inch stretched measure in the mouth and wings to 1½-inches in the extension piece and cod end. The trawl is fitted with heavy nylon riblines and reinforcing lines. Headrope and footrope are both approximately 70 feet long. The measured distance between headrope and footrope under fishing conditions varied from 30 to 42 feet depending on the speed of the towing vessel.

OTTER BOARDS AND LEGS: "Suberkrub" otter boards, developed in Hamburg, Germany, were used exclusively in tests with the 2-seam trawl. The boards are of hydrofoil design and, as described by Scharfe, consist of cylinder segments. Those used measured $3\frac{1}{2}$ by 8 feet and weighed 480 pounds each. The boards fish with their longest dimension in a vertical plane (fig. 2), in contrast to conventional bottom trawl otter boards. They were connected to the trawl net by $\frac{3}{4}$ -inch combination manila-wire rope

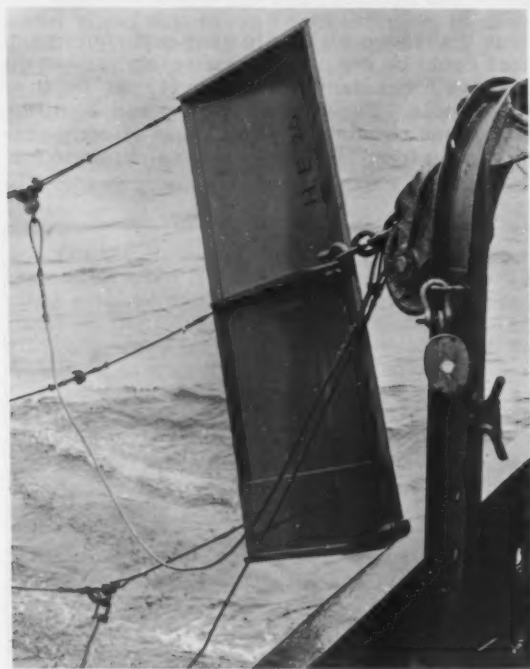


Fig. 2 - "Suberkrub"-type otter board outboard of the after-gallows of the *Delaware*. These boards are fished in the vertical position, as illustrated. With them rapid changes can be made in the depth of a midwater trawl by altering the r.p.m. of the vessel's engine. Three legs lead from the doors to the trawl.

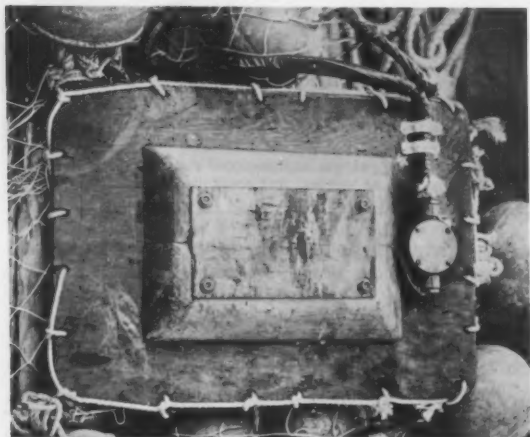


Fig. 4 - Depth transducer board mounted on the headrope of the midwater trawl. A conventional transducer is mounted in wood blocks at the center of the board. The junction box between transducer and cable is filled with silicone compound. The transducer cable is covered with a rubber hose at net to help reduce the effect of possible chafing.

legs that were 15 fathoms long. Three legs were used on each door--one attached to the headrope, one to the footrope or ground-line, and the third or middle leg to the side seam or "gore" of the trawl.



Fig. 3 - Depressor used on each of the wing ends of midwater trawl. Depressors are cast of bronze and weigh approximately 45 pounds each.

WEIGHTS AND FLOATS: The footrope of the trawl was weighted with mackerel seine leads, which had a total weight of about 40 pounds. One 45-pound depressor (fig. 3) was attached to the end of each wing to help spread the gear. Fifty 8-inch-diameter aluminum floats were spaced evenly along the headrope.

ECHO SOUNDING AND RANGING EQUIPMENT: The most significant departures from conventional trawling gear and procedure were the addition and use of an unmodified standard depth-sounder transducer that was mounted on a board attached to the headrope of the net (fig. 4). A satisfactory watertight connection was made between the transducer and the $\frac{1}{2}$ -inch, rubber-covered, 2-conductor (No. 10) cable that led to the vessel by using a bronze junction box filled with silicone paste. The transducer system gave no serious trouble during the experiments.

The cable used measured over 200 fathoms in length and allowed the net to be operated at depths up to 50 or 60 fathoms. It was covered with a 30-foot section of rubber garden hose at the net end for protection against abrasion at the point where the transducer cable was seized to the headrope of the net. The cable was set and hauled back from a hydraulically-powered reel mounted on the stern of the Delaware (fig. 5).

A vessel-mounted depth-sounder and recorder designed specifically for fisheries work was used in conjunction with the net transducer arrangement. No modification was required to the recorder. By means of a simple switch in the pilothouse the recorder could be made to record either the net and hull transducers at the same time or the hull transducer only.

Simultaneous impulses to the net transducer and to a similar transducer mounted on the Delaware's hull yielded pilothouse recordings of water depths between net headrope and the bottom and vessel hull and bottom. Indications were also given as to the opening of the trawl (distance from the headrope to the footrope) and the presence or absence of fish schools, within or below the net (fig. 6).

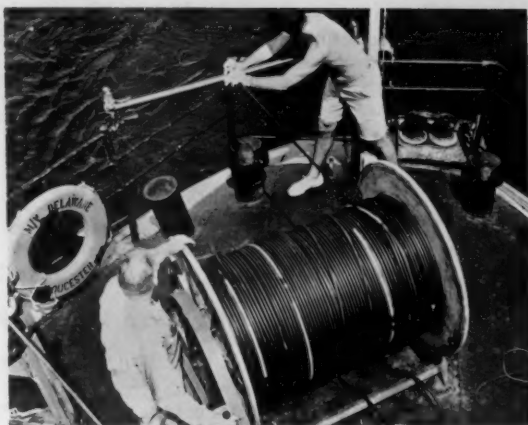


Fig. 5 - The hydraulically-powered cable reel mounted on stern of M/V Delaware. A 2-conductor (No. 10) rubber-covered electric cable is used to transmit power to the transducer on the trawl.

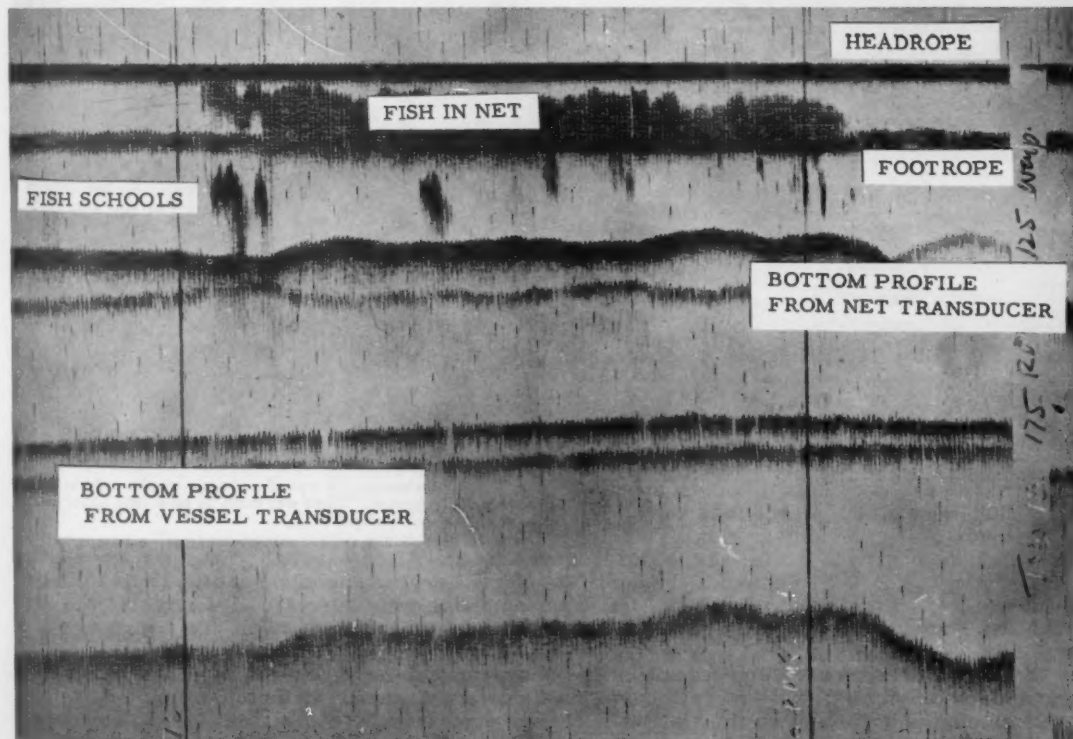


Fig. 6 - Recording showing the net over the bottom. Constant indications are given of the net's position in relation to the bottom, the presence of fish schools, and the size of the net opening (in this case about 40 feet between the headrope and footrope). This record was made along the northern edge of Georges Bank in June 1961 from the M/V Delaware.

In addition to vertical depth-sounding gear, echo-ranging or "ASDIC" equipment was also used to find concentrations of fish. This equipment operates in principle similar to that of the ASDIC equipment developed for submarine detection. Operational characteristics of the echo-ranging gear permit horizontal scanning of a zone up to 2,000 yards ahead or to either side of the vessel.

FISHING RESULTS

It became obvious early in the experiments that little in the way of catches could be anticipated unless the gear was set where positive indications of marine life appeared on the recorder or the echo-ranging screen. A need to relate the various echos received to actual catches also became obvious. The findings of Schaefer and Powell (1958), that certain types (species) of marine life display characteristics traces, seems verified, but success in associating these traces with actual organisms making them requires considerable interpretation.

Although 30 species of fish and invertebrates (table 2) were represented in the small number of midwater catches made, only 5 species were represented in catches five or more times, and just 4 species were taken in amounts of over 100 pounds per one-hour tow. Nevertheless, when fair to good signs of fish were indicated on the recording equipment, the gear used was usually effective.

Species	Scientific Name	Number of Tows Represented
Fishes:		
Atlantic herring	<i>Clupea harengus</i>	13
Whiting (silver hake)	<i>Merluccius bilinearis</i>	11
Spiny dogfish	<i>Squalus acanthias</i>	7
American mackerel	<i>Scomber scombrus</i>	5
Butterfish	<i>Poromus triacanthus</i>	5
Lumpfish	<i>Cyclopterus lumpus</i>	3
Blueback herring	<i>Alosa aestivalis</i>	1
Longhorn sculpin	<i>Myoxocephalus octodecemspinosus</i>	1
Scup	<i>Stenotomus chrysops</i>	1
Atlantic wolffish	<i>Anarhichas lupus</i>	1
Goosefish	<i>Lophius americanus</i>	1
Haddock	<i>Melanogrammus aeglefinus</i>	1
Northern puffer	<i>Sphaeroides maculatus</i>	1
Snipe eel	<i>Nemichthys scolopaceus</i>	1
Viperfish	<i>Chauliodus sloani</i>	1
Lanternfish	<i>Myctophum punctatum</i>	1
"	<i>Notocopterus sp.</i>	1
"	<i>Hygophum sp.</i>	1
I/	<i>Pseudoscophus altipinnis</i>	1
Y/	<i>Chlorophthalmus agassizi</i>	1
I/	<i>Nessorhamphus ingolfianus</i>	1
I/	<i>Ceratoscopelus maderensis</i>	1
Arthropoda:		
Euphausiids	<i>Nyctiphanes norvegica</i>	4
	<i>Rhoda inermis</i>	1
Amphipod	<i>Eutimisto compressa</i>	1
Shrimp	<i>Pandalus borealis</i>	1
Ctenophora:		
Comb jelly	<i>Pleurobrachia sp.</i>	1
Annulata:		
Sea worm	<i>Glycera sp.</i>	1
Cephalopoda:		
Sea arrow	<i>Ommastrephes illiebroza</i>	1
Squid	<i>Calliteuthis reversa</i>	1
Octopus	<i>Alloposus mollis</i>	1

I/No known common name.



Fig. 7 - Approximately 2½ tons of midwater-trawl-caught herring aboard the Delaware. Catch was made in June 1961 along the northern edge of Georges Bank.

ATLANTIC HERRING: Herring were taken in 13 of the tows completed, in amounts up to 4,500 pounds per one-hour tow (fig. 7). During cruise 61-8, schools of small herring were abundant along the northern edge of Georges Bank. After several trial tows, good catches of herring could be made consistently. Most of the herring schools were in 25 to 35 fathoms of water. School depth (observed with echo-sounding gear and visually) varied from the surface to the bottom with time of day, state of tide, and other factors (fig. 8).

Of particular interest were certain of the observations made possible by the presence of a transducer on the net. On several occasions fish were sonically determined to be at a certain depth off the bottom when the Delaware passed over them. By the time the net reached the schools, the fish had sounded--in some cases as much as 10 fathoms. Movements of these fish must be anticipated and the net must be fished at the depth toward which the her-

ring move. Herring were also observed swimming in the mouth of the trawl; when the speed of the vessel was increased, these fish were "flushed" into the cod end.

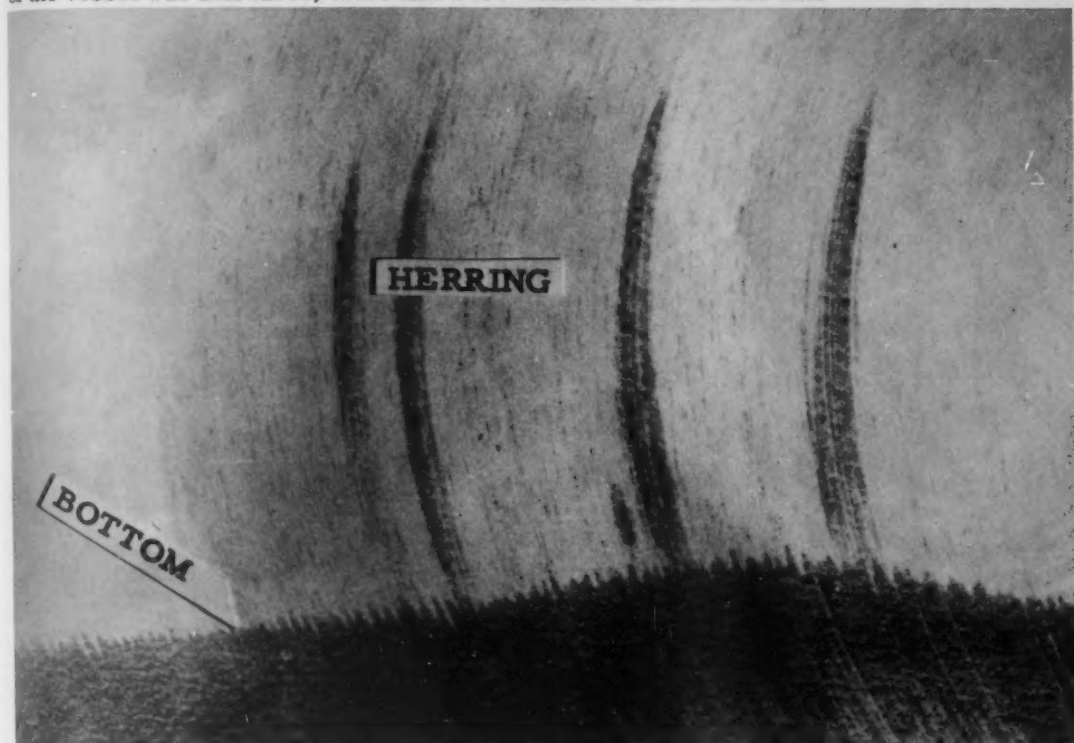


Fig. 8 - Tracings indicating herring schools along northern edge of Georges Bank, June 1961. Depth of bottom, 32 fathoms. Fish schools extended to about 15 fathoms over the bottom.

WHITING (SILVER HAKE): Although whiting were never taken in great numbers (the best individual catch rate was only about 30 pounds per hour), they were present in 11 tows, and on all 1961 pelagic fishing cruises. Commercial fishermen have noted that the whiting sometimes tend to rise off the bottom and enter mid-depths at night. This was observed during Cruise 61-11. The Delaware was allowed to drift among the commercial whiting vessels from late afternoon on July 10 until morning on July 11 while depth-sounder recordings were made. Two one-hour midwater tows were made to sample the schools indicated on the recorder (fig. 9). The resulting catches yielded only 15 to 20 pounds of small 5- to 10-inch whiting. Although the whiting were present in some numbers in the mid-depths, they did not appear to be heavily concentrated at that time.

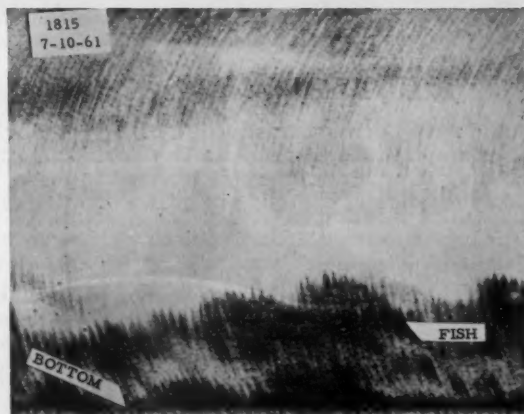


Fig. 9A - Fish starting to rise off bottom in early evening on the western edge of Georges Bank in about 43 fathoms. Recording was made while the Delaware was in the midst of the fishing fleet as whiting were being taken.

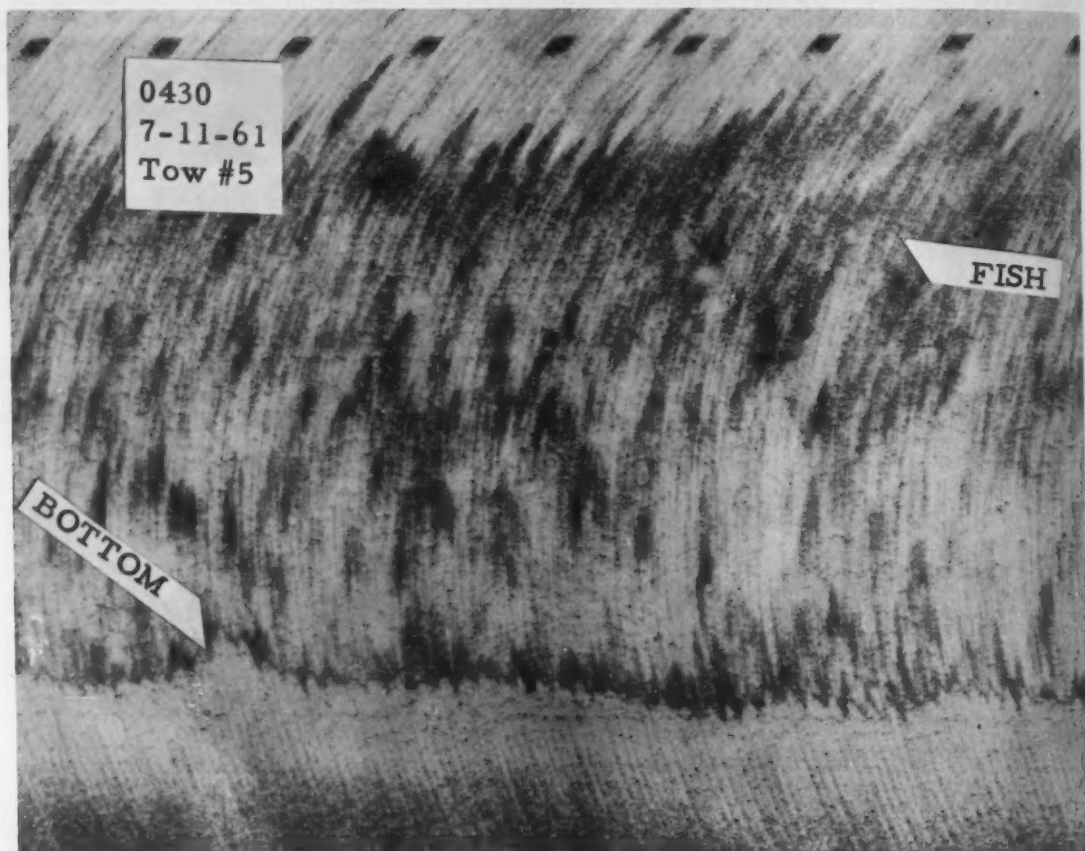


Fig. 9B - Depth sounder tracings made during midwater trawl tow. The principal catch consisted of whiting.

SPINY DOGFISH: This species, presently regarded as a pest by New England fishermen, was taken on seven different occasions. Had dogfish been the object of trawling, little trouble would have been experienced in capturing almost unlimited numbers. Dogfish were especially common in Massachusetts Bay from June through October 1961 (fig. 10). Aside from the existing lack of commercial interest in them, dogfish are avoided because of the damage that heavy catches of dogfish can inflict on a trawl net, particularly on a light nylon midwater trawl.

OTHER SPECIES: Mackerel as large as 10 inches long were taken on five occasions. Mackerel as large as 10 inches long were taken on five occasions. Best catch was roughly 100 pounds. Butterfish were present in 5 tows, but only in small numbers. Other species represented in catches and the frequency of their occurrence are listed in table 2. One catch of 500 pounds of euphausiids (krill) resulted from a short (less than one-hour) tow off Mt. Desert Rock, Maine (fig. 11).

DISCUSSION

Accelerated worldwide interest in the ability to harvest fish with midwater trawl gear has led to new developments which make such harvesting more feasible. To date, the most obvious successes have been in the capture of various species of herring, certain other fishes

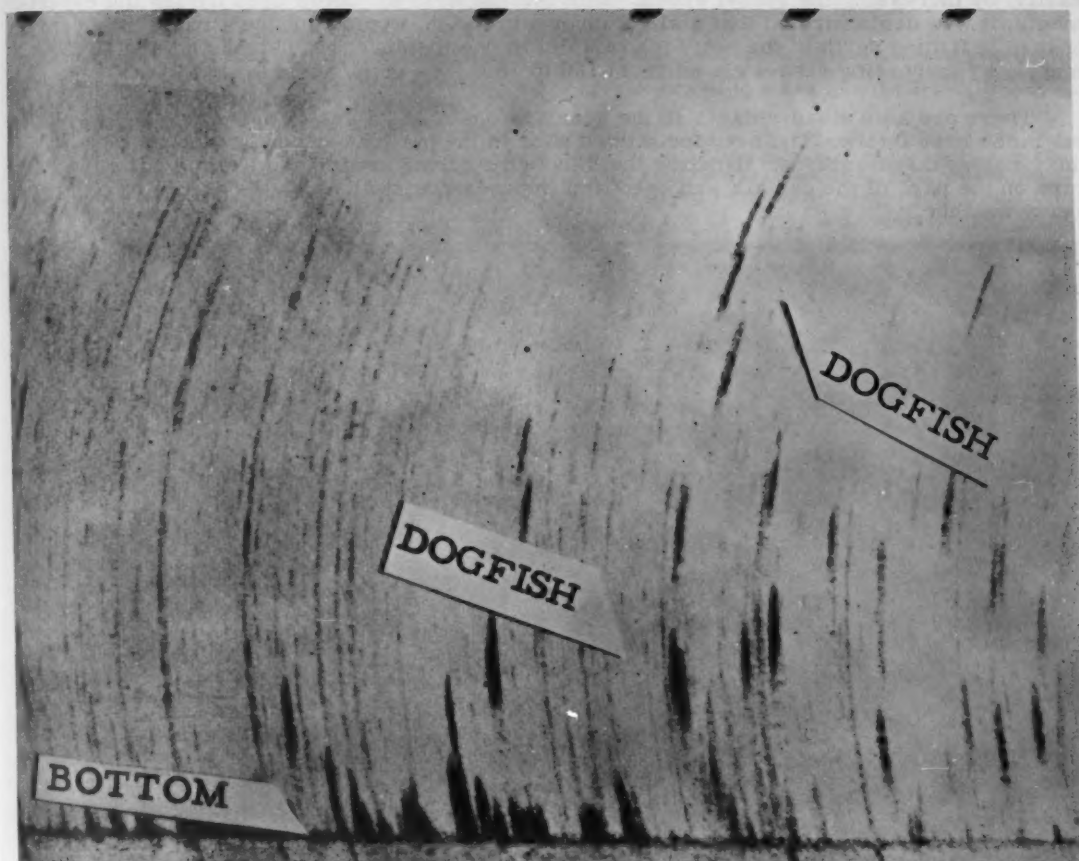


Fig. 10 - Typical indications of dogfish (*Squalus acanthias*) in the Massachusetts Bay during the summer of 1961. A short tow (less than one-hour long) yielded 700 pounds of dogfish.

related to herring, mackerel, and some of the hake. The difficulty in gaining capacity loads of fish in short periods has become a factor contributing to the present unstable economic condition of the New England trawl fishery. The midwater trawling technique offers the possibility of increasing harvests in existing fisheries under some natural circumstances. Fish that leave the bottom during part of the day might possibly be fished profitably with midwater trawls. Such fishes include ocean perch (redfish), whiting, cod, haddock, pollock, scup, and butterfish. Other fish stocks in unknown supply, presently of no particular commercial interest, or not fully used, could be caught with midwater gear. Included here are, particularly, the herring, pilchard, shad, menhaden, and their close relatives, and the mackerel, spiny dogfish, squid, and possibly even tuna.

The limited amount of work accomplished so far indicates that the type of midwater trawl gear described has great potential usefulness in midwater trawl fisheries. Among the advantages are: (1) the ability to keep constant watch over the depth of the net and (2) the ability to adjust the depth of the net to compensate for changes in fishing depth due to wind, current, or tide changes during a tow.

Observations made during the 1961 experiments indicate that changes in direction or speed of wind, current, or tide may affect the depth at which the trawl fishes. With the transducer-equipped net, such affect can be readily detected. Depth corrections can then be made,

easily, by increasing the vessel speed. With the "suberkrub" doors used during the experiments, it was demonstrated that a slight change in r.p.m. would produce a rather marked change in fishing depth of the net; for example, in one instance, the net was raised 10 fathoms merely by increasing vessel r.p.m. from 160 to 180.

There are also disadvantages in the gear system used. Some of these may be worked out in the near future. The need for a third wire to the net transducer is, perhaps, one of the greatest disadvantages. Handling the third wire during setting and hauling calls for extra care on the part of the captain and crew and imposes restrictions on the ability to fish in heavy weather.



Fig. 11 - Depth recording made off Mt. Desert Rock (Maine) in September 1961. A midwater trawl tow, made coincident with the recording, yielded 500 pounds of euphausiids and 15 pounds of small brit-size herring in less than one hour of fishing time.

Finally, development of an effective gear system, alone, does not assure development of a fishery. Particular attention in the future must be given to finding concentrations of marine animals and sampling them effectively. Supplementary gear may prove of value here, i.e., lift nets, long lines, gill nets, and lights. Detailed seasonal coverage must be obtained. Advanced concepts should also receive attention--among them electrical fields and their applications to harvesting midwater resources.

LITERATURE CITED

- BARRACLOUGH, W. E. and JOHNSON, W. W.
1956. A New Midwater Trawl for Herring, Fisheries Research Board of Canada, Bulletin No. 104, 25 pp.
1960. Further Midwater Trawl Developments in British Columbia, Fisheries Research Board of Canada, Bulletin No. 123, 45 pp.
- and NEEDLER, A. W. H.
1959. The Development of a New Herring Trawl for Use in Midwater or on the Bottom, Modern Fishing Gear of the World, Fishing News (Books) Ltd., London, pp. 351-356.
- BULLIS, HARVEY R., Jr.
1961. A Progress Report on Experimental Fishing for Sardine-Like Fishes in the Gulf of Mexico, Proceedings of Gulf and Caribbean Fisheries Institute, November 1960, pp. 94-97.
- KRISTJONSSON, H. (EDITOR)
1959. Section II - Detection of Fish, Modern Fishing Gear of the World, Fishing News (Books) Ltd., London, pp. 474-537.
- McNEELY, RICHARD L.
1958. A Practical Depth Telemeter for Midwater Trawls, Commercial Fisheries Review, vol. 20, no. 9 (September), pp. 1-10. (Also Separate No. 522.)
- PARRISH, B. B.
1959. Midwater Trawls and Their Operation. Modern Fishing Gear of the World, Fishing News (Books) Ltd., London, pp. 333-343.
- SCHAEFERS, E. A., and POWELL, D. E.
1958. Correlation of Midwater Trawl Catches with Echo Recordings in the Northeastern Pacific, Commercial Fisheries Review, vol. 20, no. 2 (February), pp. 7-15. (Also Separate No. 502.)
- SCHARFE, J.
1959. The Use of Echo Sounding as a Means of Observing the Performance of Trawling Gear, Modern Fishing Gear of the World, Fishing News (Books) Ltd., London, pp. 241-244.
1960. A New Method for "Aimed" One Boat Trawling in Midwater and on the Bottom, Studies and Reviews, General Fisheries Council for the Mediterranean, FAO, Rome, Italy, 38 pp.
- SMITH, KEITH A.
1957. An Experimental Air-Pressure Depth Meter for Use with Midwater Trawls, Commercial Fisheries Review, vol. 19, no. 4 (April), pp. 6-10. (Also Separate No. 474.)
- STELTNER, H. A. R.
1961. Proposed New Approach for Design of Midwater Trawl System, Canadian Fisherman (January), pp. 21-24.
- U. S. FISH AND WILDLIFE SERVICE
1961a. Survey of Midwater Stocks Initiated, Commercial Fisheries Review, vol. 23, no. 4 (April), p. 26.
- 1961b. Midwater Trawling for Atlantic Herring Promising, Commercial Fisheries Review, vol. 23, no. 8 (August), pp. 32-33.
- 1961c. Survey of Midwater Fishery Resources off New England Continued, Commercial Fisheries Review, vol. 23, no. 9 (September), pp. 34-35.
- 1961d. Exploratory Fishing for Canning-Size Herring Unsuccessful, Commercial Fisheries Review, vol. 23, no. 11 (November), pp. 25-26.
- 1961e. Midwater Trawling Operations Completed for 1961, Commercial Fisheries Review, vol. 23, no. 12 (December), p. 41.



PICKS

A pick is a two- or three-pronged instrument set in a short wooden handle. It is used in gathering of hardshell clams and oysters.

Another instrument is known as a mussel pick. The mussel pick is a rod flattened at one end. It is used in gathering fresh-water mussels by inserting the rod between the shell of the mussel. A device similar to the mussel pick is sometimes used in taking oysters.

Note: Excerpt from Circular 109, Commercial Fishing, Gear of the United States, for sale from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., single copy, 40 cents.



THE STOCKFISH AND SPINY LOBSTER FISHERIES OF SOUTH AFRICA

By Albert C. Jensen*

ABSTRACT

The stockfish (*Merluccius capensis*) is the most important species in the Republic of South Africa's trawl fishery. Recent annual stockfish landings were on the order of 169 million pounds. The fish are caught by large otter trawlers with the bulk of the landings going to the fresh fish market. When the stockfish are dressed at sea, the entrails are saved for the oil and meal plants ashore and the heads are saved for bait in the spiny lobster fishery. During the unloading operations, great care is exercised to insure the highest quality product possible.

The fishery for the South African spiny or rock lobster (*Jasus lalandii*) is carried out with two-man dinghies tended by wooden-hulled vessels 50 to 60 feet long. The lobsters are caught in a conical, twine pot baited with stockfish heads, fish frames, or whole fish. Only the meaty tails of the spiny lobster are used. Over 90 percent of South Africa's production of 7 million pounds of spiny lobster tails is exported to the United States.

INTRODUCTION

During October-December 1961, I was an observer for the U. S. Bureau of Commercial Fisheries aboard a U. S. Navy ship operating off the West Coast of Africa. As part of the cruise the ship visited several coastal cities including Capetown, Republic of South Africa. Thus, I was able to observe the shoreside operations of two of South Africa's most important marine fisheries.

STOCKFISH FISHERY

The otter-trawl fleet of the Republic of South Africa includes about 62 vessels, slightly more than half of which are based at Capetown. Although some 14 species of bony fishes are

included in the catches of the trawlers, the principal effort is directed toward the stockfish (*Merluccius capensis*). Recent annual stockfish landings were in excess of 169 million pounds. In second place for the landings by the trawlers was the maas-banker (*Trachurus trachurus*) with nearly 7 million pounds, and in third place was kingklip (*Gerypteris capensis*) with slightly less than 3 million pounds.

The stockfish closely resembles whiting or silver hake (*Merluccius bilinearis*), except that most of the fish I saw unloaded were larger than the usual commercial sizes of whiting in the United States. Many stockfish seemed to be between 80 and 85 centimeters (31.5-33.5 inches) long with the heads on. Kingklip resembles a red hake (*Urophycis*



Fig. 1 - A large otter trawler at the dock in Capetown, Republic of South Africa. The vessel is typical of the fleet that fishes for stockfish.

*Fishery Research Biologist, Biological Laboratory, U. S. Bureau of Commercial Fisheries, Woods Hole, Mass.

U. S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
SEP. NO. 660

chuss) both in shape and color, but grows to larger size; some of the kingklip I examined ranged from 30 to 80 centimeters (11.8-31.5 inches) in length. It is eagerly sought for the fresh-fish trade and commands a good price in the market.

FISHING VESSELS: The vessels I saw at Capetown were large, steel-hulled, about 150 feet long and resembled the large otter trawlers that fish out of Boston. They are powered by coal-fired reciprocating steam engines (since coal is relatively cheap in South Africa), although recently some thought has been given toward introducing Diesel-powered trawlers. The vessels have the conventional arrangements of winches, etc., but with gallows frames on the starboard side only. The crew numbers between 20 and 25 men, including 12 deckhands (fishermen), captain, mate, boatswain, one or more fishermen apprentices, cook and engine-room personnel.

FISHING OPERATIONS: The Continental Shelf around South Africa is quite narrow, thus relatively little time is spent steaming to and from the grounds located about 50 miles offshore, in about 300 fathoms. The vessels spend $5\frac{1}{2}$ days at sea, and fish during daylight hours only since the stockfish are off the bottom at night and thus unavailable to otter-trawl gear. About 60 to 70 metric tons of fish constitutes a good trip.



Fig. 2 - Unloading the catch of stockfish and other species. The wicker baskets are filled with fish by the hold-man and hoisted to the deck.



Fig. 3 - The filled baskets of stockfish and other species caught by the trawlers are placed on a mechanical conveyor that raises them to the pier where the fish are sorted and boxed.

The fishing operations are carried out generally about the same as they are aboard United States trawlers. The fish are gutted, beheaded, washed, and put below in the hold in pens with liberal quantities of ice. The stockfish heads also are iced below, while the liver and entrails are saved for the meal and oil plants ashore. Fish ovaries in a ripening condition ("spawn") are saved for the food market, and any octopus or squid are saved for the fish-bait market. (Incidentally, a favorite mug-up treat for the crew is a dish of boiled stockfish tongues.)

UNLOADING AND PROCESSING: The day I visited the fish pier six trawlers were tied up, some ready to unload. In a good day, 200 tons of fish will be taken out, but the biggest

day is on Sunday when about 400 tons are unloaded. The unloading process is quite interesting, particularly to someone who has witnessed the treatment, including pitchforks, that is accorded fish at our New England fish piers.

Aboard the vessel, the hold-man shovels the fish from the pens into wicker baskets about 3 feet long, 1½ feet wide, and 1 foot deep. The shovel used is very much like the perforated ice shovel used aboard our trawlers. Great care is exercised in removing the fish from the pens. Any bruised or damaged fish are rejected by the fresh-fish market, and must go to be



Fig. 4 - Sorting the stockfish and other species caught by the trawlers. The fish move on a conveyor belt and the men separate them by species. Any damaged fish are removed, the rest are packed in aluminum kits and shipped by truck or rail to market.

salted and dried, or smoked. Ice is put in the wicker baskets to insure the continued freshness of the fish during the unloading operations. This is especially important with the stockfish which, like our whiting, tends to soften in a comparatively short time.

The filled wicker baskets are hoisted out of the hold to the deck where they are placed on a conveyer belt that raises them to the fish pier. At the top of the conveyer a worker dumps the basket into a hopper that separates the fish and ice. The ice drops into a separate trough while the fish move onto a horizontal conveyer belt that passes in front of a line of men. The men sort out the species and also reject any damaged fish. The fish are then placed in aluminum fish boxes, each holding about 100 pounds, with plenty of ice. The boxes go immedi-

ately into waiting refrigerated trucks or railroad cars and are transported directly to retail markets in Capetown and other parts of South Africa. In season, spawn is cello-wrapped for the retail markets. Throughout all of the fish handling operations the emphasis is on securing the highest quality product possible.



Fig. 5 - Piles of stockfish heads. The heads are packed in aluminum kits and taken to one of three markets. Some are smoked and sold for human food in other parts of Africa, some are used for bait in the spiny lobster fishery, and the rest go for reduction.

are sold to the spiny lobster fishery for bait; the larger heads are smoked and sold as food in other African nations. Ghana, for example, is an important customer for smoked stockfish heads, and they are also popular in the interior sections of Africa. Any heads not used in either of these outlets go to the meal plant. Some of the slightly bruised or damaged stockfish are smoked and sold in the retail markets as "haddock." Stockfish (not suitable for the fresh fish or the haddock trade), maasbanker, and pilchards are salted and dried, and shipped as "minefish" to feed the workers in the South African gold and diamond mines.

SPINY LOBSTER FISHERY

The fishery for "kreef"^{1/} or spiny lobster (*Jasus lalandii*) began on a limited scale in South Africa before the beginning of the 20th Century but was not established on a sound economic basis until after World War II. Today, the annual production of frozen spiny lobster tails is about 7 million pounds.



Fig. 7 - Part of the Capetown fleet engaged in the South African spiny or rock lobster fishery.

^{1/}Afrikaans word for crayfish.



Fig. 6 - Boxes of stockfish heads ready to be loaded aboard a spiny lobster vessel for bait.



Fig. 8 - A spiny lobster vessel with a few crew members relaxing around one of the dinghies used to tend the lobster pots. The pots, with their buoy lines and the strings of cork floats that form the buoys, are draped over the boom.

VESSELS AND FISHING OPERATIONS: The spiny lobster fleet that fishes out of Capetown is composed of wooden vessels, 50 to 60 feet long, that resemble New England draggers in profile. Each vessel carries 4 to 6 wooden dinghies and a crew of 12 to 16 men. They fish days only, 30 to 40 miles offshore in about 15 fathoms. Some of the vessels stay out overnight, fish the morning of the second day, and return to unload their catch in the afternoon.

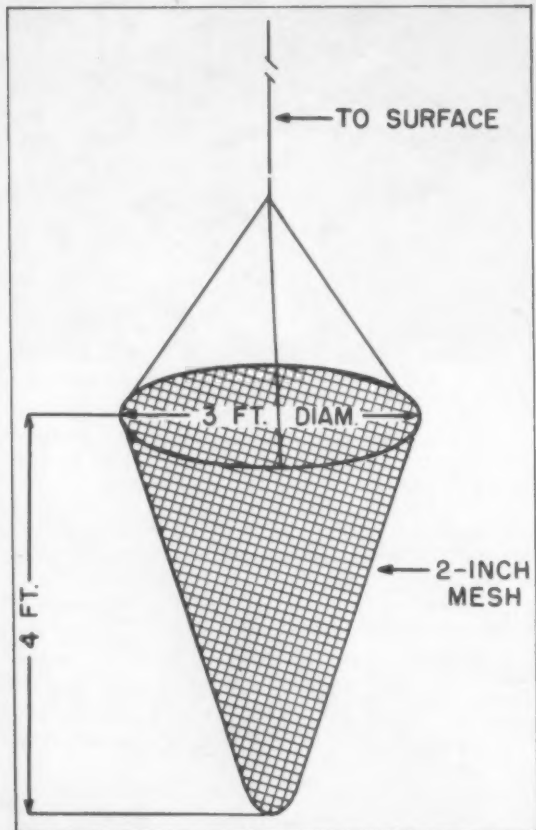


Fig. 9 - Diagram showing the shape and size of the spiny lobster pot used by the Capetown fleet.

The gear used is a conical, twine pot, to which is attached a length of buoy line and a marker buoy. When the boat reaches the fishing ground the dinghies, each manned by two men, are put over the side. Each dinghy fishes eight pots. The pots are baited with stockfish heads, pilchards, maasbankers, or fish frames, and set on the bottom. From time to time they are lifted and inspected, and any lobsters in the pots are removed and placed in a bag hung over the side of the dinghy.

UNLOADING AND PROCESSING: At the end of the fishing period the catch from each dinghy is placed on ice in the hold of the vessel; about 100 pounds of lobsters constitutes a

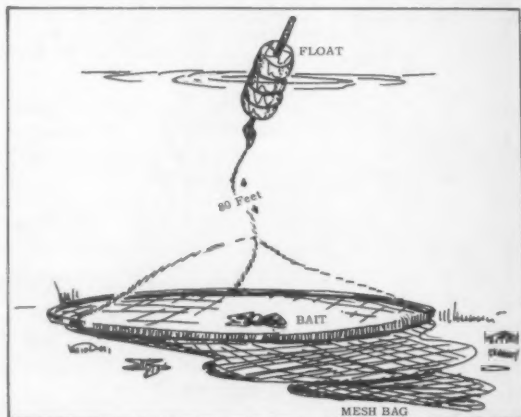


Fig. 10 - Sketch showing the way the pot rests on the bottom when it is fishing. Stockfish heads or other bait are tied to the mesh and the pot is raised periodically to remove any lobsters that may have entered.

fair trip. At the wharf, company-employed lumpers unload the trip of iced, but still living, lobsters. A man in the hold loads the lobsters into wicker baskets that are passed up by hand to the wharf and dumped into hand carts. At this point in the operation, inspectors hired by the fishing industry association check the lobsters for minimum size.

The filled carts are then wheeled into a long, open concrete shed where workers separate the tails from the body. The tails are graded by weight, packed in cartons holding about 20 pounds, and frozen, with the bulk of the production (more than 90 percent) going to the United States. The remainder of the lobster body goes to the meal plant.



TRENDS AND DEVELOPMENTS

Alaska

COURT RULING ALLOWS ALASKA TO TAX FREEZERSHIPS OPERATING IN BRISTOL BAY:

An Alaska Court ruling probably will subject freezerships operating in Bristol Bay to an Alaska license tax even if the freezerships take on fish at sea from catcher vessels. According to the *Seattle Post-Intelligencer*, Sept. 6, 1962, the First District Superior Court of Alaska ruled on Sept. 5, 1962, that the territorial waters of Alaska in Bristol Bay are those waters within a line from Cape Newenham on the north side of Bristol Bay to Cape Menshikof on the Alaska Peninsula. A line from Cape Newenham to Cape Menshikof would pass at least 50 miles southwest of Nushagak Bay and would enclose all important salmon-fishing grounds in Bristol Bay.

The Alaska legislature imposed a license tax in 1951 on freezerships and floating cold storages equal to 4 percent of the value of the fishery products frozen by the vessel. Most freezerships operating in Bristol Bay buy salmon for canneries in the State of Washington. They move into Bristol Bay during the salmon season, take on a cargo of fish for freezing, and then return to their home ports where the fish are processed.



Alaska Fisheries Exploration and Gear Research

STOCKS OF KING CRABS LOCATED NEAR KODIAK:

M/V "Yaquina" Cruise 62-1 (July 7-August 19, 1962): Possible commercially-valuable stocks of king crabs were located as a result of exploratory fishing conducted by the U. S. Bureau of Commercial Fisheries chartered fishing vessel *Yaquina*, during a cruise in the vicinity of Kodiak.

Combined trawl and king crab pot sampling was undertaken by the *Yaquina* on a six weeks exploration of potential king crab fishing grounds in the Portlock Bank area east of Kodiak Island.

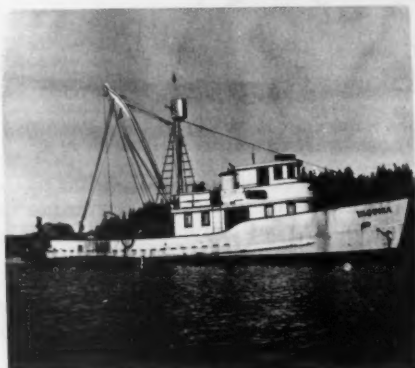


Fig. 1 - The 75-foot *Yaquina* chartered by the Bureau of Commercial Fisheries to conduct exploratory fishing surveys in Alaskan waters during 1962.

Depths from 42 to 120 fathoms were surveyed for crabs in a series of 61 one-hour tows with a standard 400-mesh eastern otter trawl. The trawled zones found most productive of king crabs were then fished approximately 24 hours each with units of 15 standard, 6-foot, round king crab pots equipped with vertical tunnel openings. Pot sampling was accomplished at 16 locations. Crabs were found on nearly all of 77 stations, representing preliminary examination of an area of about 5,500 square miles.

Marketable crabs in commercial quantities (more than 30 crabs per pot) were found at depths from 46 to 82 fathoms in a submarine gully extending about 40 miles southeast from the vicinity of Cape Chiniak. The best catches here were made along the northeast side of the gully, increasing in quality and abundance proceeding seaward and into deeper water. The average catch per pot of 48 pot sets in the 70-

to 82-fathom zone was 24 marketable male crabs averaging about 10 pounds each; the best catch by a single pot in Chiniak Gully was 58 such male crabs from 73 fathoms.

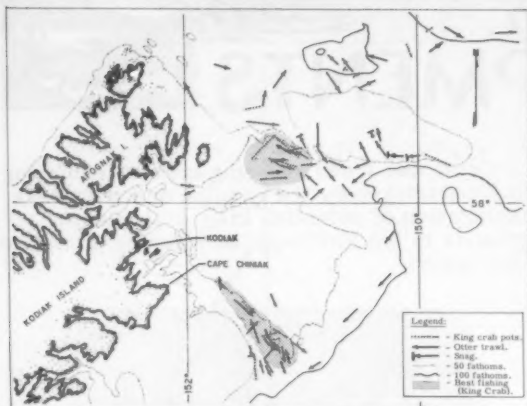


Fig. 2 - Grounds fished by M/V Yaquina cruise 62-1 (July 7-August 19, 1962). Vessel operates from Juneau, Alaska.

A second area of potential value to the commercial fishery during the summer period lies in a broad submarine gully at about 20 miles due east of Marmot Island. In this area 46 pots caught an average of 20 marketable crabs each, within a depth range of 59 to 94 fathoms. The best catch from a single pot here was a catch of 64 crabs. This pot was of a modified design and was fished in a depth of 92 fathoms.

Trawl catches also yielded information on other potentially-important species. Pacific ocean perch were frequently taken at rates ranging from 1,000 to 5,500 pounds per hour. Also in abundance were rock sole, caught in amounts up to 1,800 pounds during a one-hour tow in the Chiniak Gully area at depths from 42 to 60 fathoms.

Incidental to the exploratory operations, was the tagging and releasing of king crabs and halibut in cooperation with biologists of the Bureau and the International Pacific Halibut Commission. Specimens of marine life were preserved for later study by cooperating scientists.

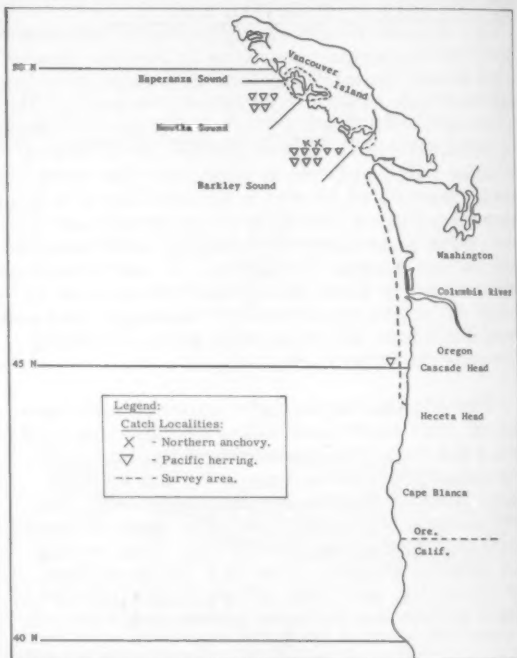
The chart shows the grounds fished and shaded areas where commercial fishing of king crabs might be possible. Three otter-trawl drags and one pot station near 58°35' north latitude, 148°30' west longitude, are not shown. These stations did not yield commercial quantities of crabs.



California

PELAGIC FISH POPULATION SURVEY CONTINUED:

M/V "Alaska" Cruise 62-A-3 (July 16-August 14, 1962): The three objectives of this cruise were: (1) to determine if there were any traces of the sardine population that formerly migrated to the Pacific Northwest in summer, (2) catch live sardines for sub-population studies, and (3) collect other pelagic species for density and distribution studies. The sounds of western Vancouver Island and the coastal waters of Washington, Oregon, and central California were the areas



Area of operations of M/V Alaska during cruise 62-A-3.

explored by the California Department of Fish and Game research vessel Alaska during cruise 62-A-3.

VANCOUVER ISLAND: No sardines were caught or observed off the Island. Night-light stations using a blanket net and visual scouting during both day and night failed to locate fish. Several fishermen reported seeing a few individual sardines in 1958, but most fishermen interviewed on this trip hadn't seen any for many years.

Pacific herring were abundant in the sounds and inlets. They were caught on 72 percent of the night-light stations and ranged from 60 to 200 millimeter (2.4 to 8.0 inches) standard length. The blanket net appeared to be an excellent sampling tool for herring in this area. Up to 7,000 herring were taken in single sets, with catches averaging about 1,000 fish. Excellent sea conditions and favorable fish behavior made the net effective.

Large northern anchovies ranging from 142 to 165 millimeter (5.7-6.6 inches) standard length, were caught in Barkley Sound. Young silver salmon 115 to 382 millimeter (4.6-15.3 inches) standard length were caught on 39 percent of the light stations. They were feeding on polychaete worms and small herring which were attracted to the light. Up to a half dozen were observed at once, but usually not more than two were caught in the net.

WASHINGTON-OREGON-CENTRAL CALIFORNIA: No sardines were caught or observed in these areas. Light stations were much less productive than those off Vancouver Island. One sample of Pacific herring was caught by blanket net and a school group of large adults was observed off Cascade Head, Oregon. A single albacore tuna was caught 65 miles west of the Columbia River.

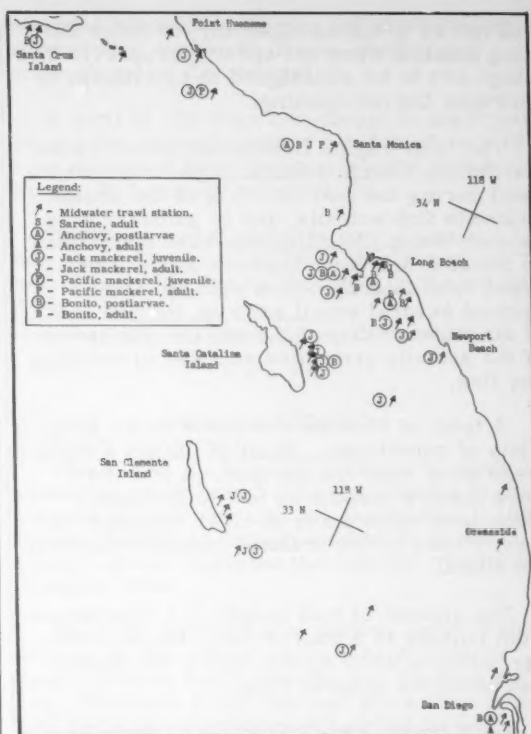
Catch Summary of Cruise 62-A-3 by M/V Alaska

Area	No. of Stations	Samples		
		Herring	Anchovy	Young Salmon
Vancouver Island	18	13	2	7
Washington-Oregon	20	1	0	0
Central California	3	0	0	0
Totals	41	14	2	7

Except for central California, fair weather prevailed over the areas surveyed during the cruise. Sea-surface temperatures ranged from 67.1° F. (19.5° C.) at Esperanza Sound to 52.2° F. (11.2° C.) off Cape San Martin. Temperatures in the sounds of Vancouver Island dropped sharply within a few feet of the surface.

* * * * *

M/V "Alaska Cruise 62-A-4 (August 22-September 7, 1962): To evaluate a midwater trawl as a tool for sampling the pelagic environment in coastal waters (including those around the Channel Islands between Point Hueneme and San Diego) and to develop techniques for handling the gear on future sea surveys were the principal objectives of this cruise by the California Department of Fish and Game research vessel Alaska.



Area of operations of M/V Alaska during cruise 62-A-4.

The midwater trawl is constructed with a square mouth opening of 63 feet on each side. The over-all length is 160 feet and the mouth, breast, and lead lines are 91 feet long. The wings and body are made from 4½-inch mesh webbing; the intermediate section is made from 3-, 2-, and 1-inch mesh, and the cod end, from ½-inch mesh. The net is 1,200 meshes in circumference behind the wings. All netting and lines are made of nylon.

The net is held open by quarter doors attached to the four corners of the net. Each quarter door is 32 by 48 inches, and is constructed of 1½-inch marine plywood. The quarter doors are bridled with 45 fathoms of 5/16-inch cable. Two regular trawl doors are attached at the apex of the bridles, and provide the downward pull to sink the net to the desired fishing depth.

The net operated quite well during the cruise and only minor adjustments were necessary to produce the maximum attainable spread. The net spread to an opening of 35 to 40 feet, with all doors stable. That spread

was not as great as hoped for, because the wing meshes were not opening properly. The wings are to be redesigned in an attempt to increase the net opening.

The twin-engine Beechcraft owned by the California Fish and Game Department was used during the last two days of the cruise to locate fish schools, and to guide the *Alaska* over them. Fog limited those operations to the afternoons during both days. The plane used in conjunction with the cruise spotted several small schools, but the lack of maneuverability of the net and the speed of the schools prevented success in catching any fish.

A total of 39 tows was made under a variety of conditions. Most of the tows were made at or near the surface. A few tows were made at depths up to 100 fathoms. Some tows were made in clear offshore waters, others in the shallow, turbid water near the coast.

The amount of fish caught in a haul varied from nothing to 3 tons of fish. On the average, catches were small, with a few dozen fish being the general rule.

Adult bonito were caught in 10 tows, in amounts ranging from 2 to 118 fish. Young jack mackerel were netted in 17 tows. Adult jack mackerel were caught in 5 tows, including 1 tow which yielded about 50 pounds (1,500 fish) of mixed adult and young fish. Adult and young Pacific mackerel were each taken in another tow. A single adult sardine was found in a mixed haul of jack mackerel and jack smelt from Los Angeles harbor. Post larval anchovies were found hung up in the net meshes on 5 tows, and about 3 tons of adult anchovies were caught on 1 tow.

A number of less important species were caught frequently. Bat rays were caught in tows, molas in 5, and medusafish in 6. Two samples of jack smelt yielded about 175 fish each, and young Pacific hake were caught in 2 tows.

Invertebrates comprised a prominent part of the catch on this cruise. About 500 pounds of large jellyfish were collected on several tows, and large numbers of salps were frequently found in the cod end and hung up in the net mesh. Small amounts of several species of squid were caught occasionally.

Preliminary tows made on the cruise showed considerable promise for the midwater trawl as a sampling tool. The ability of the net to sample fast-moving bonito, its ability to catch a large sample of a dense concentration of anchovies, and its ability to collect consistent samples of young jack mackerel all demonstrated its effectiveness as a sampling tool. There are plans to test the net further during the fall months of 1962 so as to compare catches made using a blanket net with those made using the midwater trawl.

Airplane Spotting Flight 62-8-Pelagic Fish (August 7-9, 1962): To determine the distribution and abundance of pelagic schools, the inshore area from the United States-Mexican Border to Bolinas Bay was surveyed from the air by the California Department of Fish and Game's Cessna "182" 9042T.

The first day's survey covered the area from Los Angeles Harbor to Point Conception. Seven anchovy schools were sighted below Point Dume, and in the area between Port Hueneme and Gaviota, there were 173 anchovy schools. So far this year the schools in that area, have been for the most part, between 1 and 2 miles offshore. On this spotting flight, the schools were very close (200 to 300 feet) to shore, and some were strung out along shore for about one-half mile. Where kelp beds were present, which is common in that area, the schools were between the inner edge of the kelp and shore.

On the second day of the flight, the area from Bolinas Bay to Point Sal was surveyed. The aircraft started at Moss Landing and flew along the coast to Bolinas Bay. Between the Pajaro River and Bolinas Bay, 519 schools of anchovies were counted. Between Half Moon Bay and the Pajaro River, 437 schools were counted, and 78 between Half Moon Bay and Bolinas Bay. What was believed to be four anchovy schools were sighted off Angel Island in San Francisco Bay. Red tide was prevalent in Monterey Bay, and was especially heavy from Santa Cruz to Moss Landing. There were numerous anchovy schools in the same area. It seemed that if they were not in the red tide, they were beneath it. Eighty-eight schools were counted from Pfeiffer Point to Cape San Martin. From San Simeon to Pismo Beach, 272 anchovy schools were observed--189 of them in Escondido Bay. In the cove above Gamboa Point,

four purse seiners were reported to be looking for sardines. One boat was making a set but there were no fish in the net.

On the last day of the survey, the area from Redondo Beach to the United States-Mexican Border was covered. Eight anchovy schools were noted off Rock Point and one at Los Angeles Harbor. Two schools were seen off Bolsa Chica (Tin Can) Beach and six off Newport Pier. Off Capistrano Pier, 13 schools appeared to be mixed in with the red tide. A total of 57 anchovy schools were observed between Camp Pendleton and "The Barn." The usual concentration of anchovies was sighted between San Diego and the United States-Mexican Border where 62 schools were counted. Traces of red tide were also seen in that area.

No sardine or mackerel schools were seen on any days of the flight.

Note: See Commercial Fisheries Review, October 1962 p. 11.

MIDWATER TRAWLING FOR SALMON FINGERLINGS CONTINUED:

M/V "Nautilus" Cruise 62-N-8a-Salmon (August 7-10, 1962) and 62-N-8b (August 20-24, 1962):

Mid-water trawl operations in the Carquinez Strait for marked salmon fingerlings on their seaward migration were continued by the California Department of Fish and Game research vessel Nautilus. A nylon midwater trawl with 25-foot square opening was used.

Trawling in Carquinez Strait was conducted between 8 a.m. and 3 p.m. and each tow was for 20 minutes. All tows were al-

ternated between upstream and downstream, and between the north shore, center, and south shore of the channel.

A total of 101 tows completed in the Strait during the cruises yielded a catch of only 19 king salmon (*Oncorhynchus tshawytscha*). No marked salmon were caught.

Pacific saury (*Cololabis saira*) was a new species appearing for first time since mid-water trawling by the Nautilus began on April 10, 1961.

Note: See Commercial Fisheries Review, October 1962 p. 10.

ANNUAL SALMON SPAWNING SURVEY STARTED:

The annual survey of California's salmon spawning stock on all salmon streams in the Central Valley was started on October 1, 1962, by the California Department of Fish and Game. It will continue through the middle of January 1963.

Most of California's salmon sport fishery is in the survey area which extends from Redding south into the San Joaquin Valley. Fourteen State fish and game assistants and fisheries men were scheduled to work full time on the project during the survey period.

The annual survey is made to estimate the number of king salmon spawners, their spawning success and distribution in the streams, and to detect any adverse conditions affecting California's salmon resource. The survey includes aerial counts of individual spawning beds and of concentrations of spawning fish. Because salmon die after spawning, ground observers keep a count of spawned-out salmon carcasses so as to avoid duplication.

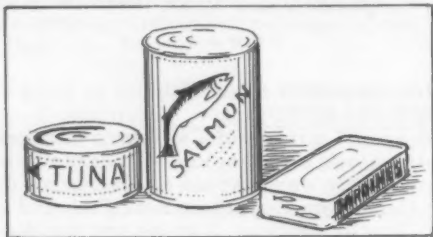
California's annual salmon spawning survey furnishes much of the basic information needed for managing its salmon resource, and provides data needed to evaluate water project developments which affect salmon.



Species	Number
Northern anchovy (<i>Engraulis mordax</i>)	134,000 est.
Pacific herring (<i>Clupea pallasii</i>)	1,500 est.
Jacksmelt (<i>Atherinopsis californiensis</i>)	1,300 est.
Striped bass (<i>Morone saxatilis</i>)	368
American shad (<i>Alosa sapidissima</i>)	161
Sacramento smelt (<i>Spirinchus thaleichthys</i>)	84
King salmon (<i>Oncorhynchus tshawytscha</i>)	19
Surfsmelt (<i>Hypomesus pretiosus</i>)	17
Starry flounder (<i>Platichthys stellatus</i>)	4
Staghorn sculpin (<i>Leptocottus armatus</i>)	3
Northern midshipman (<i>Porichthys notatus</i>)	3
Shiner perch (<i>Cymatogaster aggregata</i>)	1
Rainbow trout (<i>Salmo gairdnerii</i>)	1
White croaker (<i>Genyonemus lineatus</i>)	1
White sturgeon (<i>Acipenser transmontanus</i>)	1
White catfish (<i>Ictalurus catus</i>)	1
Pacific saury (<i>Cololabis saira</i>)	1

Cans--Shipments for Fishery Products, January-July 1962

The amount of steel and aluminum consumed to make cans shipped to fish and shellfish canning plants during January-July 1962 was 4.5 percent above that used during the same period in 1961. Prior to this year, the figures covered only tinplate cans, but beginning with January 1962 aluminum cans are included. It is believed that only a small amount of aluminum is being used in cans used for fishery products at present.



A total of 1,827,187 base boxes of steel (tinplate) and aluminum were used in the manufacture of cans shipped to fishery plants during the first seven months of 1962, whereas in the same period of 1961 (when only tinplate was reported), 1,747,703 base boxes of steel were consumed. The increase was mainly due to larger packs of Maine sardines, shrimp, salmon, and tuna during 1962. Note: Statistics cover all commercial and captive plants known to be producing metal cans. A "base box" is an area 31,360 square inches, equivalent to 112 sheets 14"x20" size. The 1962 data are derived by use of the factor 21.8 base boxes per short ton of steel.



Central Pacific Fisheries Investigations

FIRST RAFT EXPEDITION TO STUDY FISH BEHAVIOR NEAR OCEAN FLOTSAM:

Raft "Nenue" (September 26-October 13, 1962): A new and unique floating laboratory consisting of a 12-foot square raft called the Nenue was recently used off the Kona coast of Hawaii to study the makeup and behavior of the mixed fish communities which form under drift logs and other flotsam in the ocean. This first raft expedition (described as Koalana I) by the Honolulu Biological Laboratory of the U. S. Bureau of Commercial Fisheries was in conjunction with operations of the Bureau's research vessel Charles H. Gilbert. The raft was

used as a floating laboratory by three of the Bureau's scientists from September 27 to October 9.

The Charles H. Gilbert with the Nenue aboard sailed on September 26 for the raft's planned launching position off Napoopoo, Kona. The expedition was to return to its base at Kewalo Basin, Honolulu, on October 13.

The vicinity of any sizable drifting object often provides excellent fishing, particularly for dolphin (mahimahi) in Hawaiian waters, and is also an indication of tuna concentrations in some parts of the Pacific. The scientists studying tuna behavior are seeking information on (1) the association between fish and flotsam, (2) how the various members of such an aggregation react, and (3) how their reaction might be put to practical use in the commercial fisheries.

The Nenue is built of timbers, with a bamboo facing to provide a base for growth of seaweeds and sessile animals such as barnacles. Six oil drums under the raft give additional buoyancy. From the middle of the raft a 6-foot metal cylinder, closed at the bottom and equipped with six glass-viewing ports, protrudes down into the water. A small house protects the observers from the weather and shades the inside of the observation capsule for better visibility.

The observers worked aboard the raft, one in the underwater chamber and one on deck. The fish, birds, and marine mammals which gathered under and around the Nenue were recorded and photographed. Detailed notes were taken on their behavior toward the raft and toward one another. At the same time, similar observations were made from the deck and the underwater observation chambers of the Charles H. Gilbert at various distances from the raft. Plankton collections, water temperature and salinity measurements, and weather observations also were made from the accompanying research vessel. The work was limited principally to daylight hours.

MACHINE TABULATING EQUIPMENT USED TO ANALYZE CRUISE OBSERVATIONS:

The fishery resources and oceanic environment of the central Pacific Ocean have been studied for the past 12 years by biologists of the U. S. Bureau of Commercial Fish-

eries Biological Laboratory at Honolulu, Hawaii. More than 150 cruises have been made between 1950 and 1962 by the laboratory's research vessels and chartered fishingboats. Many of those cruises were long trips over immense stretches of the Pacific, extending from the Society Islands and New Caledonia in the South Pacific to the Aleutians on the north, and from the United States coast to Wake Island in the northwestern Pacific. Routine watches for fish schools and bird flocks (which indicate the presence of fish schools) were kept on each cruise, and all sightings have been recorded. Laboratory records of these cruise observations were recently tabulated on IBM machine-sort cards in a way that permits their analysis in terms of sightings per hour of scouting.

The observations data have been compiled to show the geographical and seasonal distribution of sightings of bird flocks, all fish schools, and schools identified as skipjack tuna. The result is a series of 12 charts, each covering 3 months of the year and showing the number of sightings per 10 hours of scouting for each 5-degree square.

Within the area between latitudes 20° S. and 30° N., longitudes 110° W. and 180° , the charts make certain features of the distribution immediately apparent. Fish schools and bird flocks are most numerous near island groups, and are very scarce throughout the intervening oceanic areas. Sightings of all fish schools, of skipjack schools, and of bird flocks were most frequent in the Marquesas, Tuamotu, and Society Islands of French Polynesia, followed by the Line Islands and then the Hawaiian Islands. Skipjack schools were 6 times as numerous in the Marquesas as in the Hawaiian area during December to February, while from June to August they were seen in about equal numbers in both regions. The heaviest concentration of bird flock sightings appears in the Christmas Island area of the Line Islands.

These charts also prominently show the seasonal changes in the apparent abundance of schools and bird flocks. In the Hawaiian area there is a definite seasonal trend with sightings at a maximum from June to August. In the waters around the Marquesas Islands, the seasonal trends are less well defined, especially in the sightings of bird flocks, but there was a maximum of schools seen from December to February. The Line Islands did not show the uniform pattern of seasonal

distribution that might have been expected from their location close to the Equator. Sightings of bird flocks and of all fish schools were at a maximum during March-May, with a secondary peak in fish school abundance indicated from September to November.

For the Hawaiian area, the charts point up a marked contrast between the northeastern sector, where sightings were conspicuously infrequent, and the higher sighting rates recorded for waters to the southwest of the Islands. Only during the summer months from June to August were bird flocks and fish schools at all numerous more than 100 miles northeast of the Hawaiian chain. At other seasons of the year they were either absent or present in very small numbers.

This series of charts is part of a projected summary of the past records of cruise observations by the Honolulu Biological Laboratory's scientists and fishermen. The use of automatic data processing methods will make it possible to produce similar graphic condensations of the results of extensive long-line, pole-and-line, and troll fishing in much of the same area.



Fishy Odors and Flavors

CONTRACT STUDY COMPLETED:

The final report on a project to investigate the origin and the nature of compounds responsible for undesirable fishy odors and flavors that develop in fish oils was submitted in September 1962 to the U. S. Bureau of Commercial Fisheries. The contract for the project, which is now completed, was awarded by the Bureau to the Hormel Institute, University of Minnesota, Austin, Minn. The project was under the supervision of the Bureau's Seattle Technological Laboratory.

The methods used in the study included separation of the odors and attempts to associate them with different components of the oil, isolation and identification of the highly volatile compounds present in fish oil, and studies on the auto-oxidation of purified fish oil methyl.

Note: See Commercial Fisheries Review, September 1962 p. 20.



Great Lakes Fishery Investigations

LAKE TROUT DISTRIBUTION STUDIES IN WESTERN LAKE SUPERIOR CONTINUED:

M/V "Siscowet" Cruise 6 (August 27-September 7, 1962): Studies to obtain information on the abundance and distribution of young lake trout in the Apostle Islands region of Lake Superior were continued during cruise 6 of the research vessel Siscowet (operated by the U. S. Bureau of Commercial Fisheries). Semiballoon trawls were used on this cruise. They were towed at 15 locations, at depths ranging from 6 to 31 fathoms. Small lake trout were caught at almost every station; one 15-minute tow east of Basswood Island yielded 137 small trout from six different plantings. Nearly all of the lake trout were found at depths between 20 and 25 fathoms.

Out of a total of 605 young lake trout caught during the cruise, 599 (99 percent) were fin-clipped. About 500 of the fish were returned alive to the water after removal of the anal fin, in an attempt to obtain information on population density. Only one of the re-marked fish was caught a second time.

The table lists the number of hatchery-reared lake trout caught in the Apostle Islands area to date in 1962 with completion of cruise 6, and the percentage of the total contributed by different plantings.

Number of Hatchery-Reared Lake Trout Caught by M/V Siscowet as of September 7, 1962					
Season and Year of Release	No. of Fish Planted	Age Group of Fish			
		I		II (And Older)	
		No. of Fish Caught	% of Total Caught a Second Time	No. of Fish Caught	% of Total Caught a Second Time
Spring 1962 (Bayfield, St. Croix Falls)	256,500	286	69.6	-	-
Spring 1962 (Pondville Creek)	120,800	125	30.4	-	-
Spring 1961 (Bayfield)	108,800	-	-	218	34.5
Spring 1961 (Pondville Creek)	108,200	-	-	215	34.0
Spring 1960 (Bayfield)	161,350	-	-	170	26.9
Spring 1959 (Bayfield)	226,600	-	-	29	4.6

Note: Recapture of less than 10 fish from a single planting are not listed; the rearing station is given in parentheses in the first column.

Other species caught in the trawls included *Coregonus hoyi* chubs (as many as 116 in one 15-minute tow), smelt, pygmy whitefish, sculpins, and ninespine sticklebacks. Chubs (*C. hoyi*) and smelt were taken most commonly in tows which yielded large

numbers of lake trout. Sticklebacks and sculpins were most common in areas where few or no lake trout were caught.

Experimental gill nets (1- to 5-inch mesh by 1/2-inch intervals) set in 25 fathoms in Presque Isle Bay caught few fish, most of which were chubs.

Surface water temperatures ranged from 59.4° F. east of Bear Island to 66.2° F. in Punky Bay.

Note: See Commercial Fisheries Review, October 1962 p. 17.



Gulf Exploratory Fishery Program

SHRIMP MARKING STUDY IN GULF OF MEXICO CONTINUED:

M/V "George M. Bowers" Cruise 42 (September 19-October 4, 1962): The catching, staining, and release of brown shrimp (*Penaeus aztecus*) and white shrimp (*Penaeus setiferus*) were the main objectives of this cruise by the U. S. Bureau of Commercial Fisheries research vessel George M. Bowers. The vessel operates from the Gulf and South Atlantic Exploration and Gear Research Base at Pascagoula, Miss. This was another cooperative trip made jointly with the Bureau's Galveston Biological Laboratory, and was part of the initial phase of a continuing study to obtain a preliminary estimate of growth, mortality, and migration patterns of those shrimp species.

Staining of white shrimp was conducted in two areas off the Louisiana coast. In one of the areas, between Trinity and Tiger Shoals, 1,900 shrimp were stained with fast green dye and released in the 2- to 5- fathom depth range. In the other area between Cameron and Sabine, 2,200 shrimp were stained with a Trypan blue dye and released in the same depth range.

On this cruise, trawling was also conducted between Grand Isle and Trinity Shoal but too few shrimp were caught, and none was stained. The same situation existed in the 10- to 14-fathom depth range southeast of Freeport, Texas. Bad weather ended cruise operations at that point.

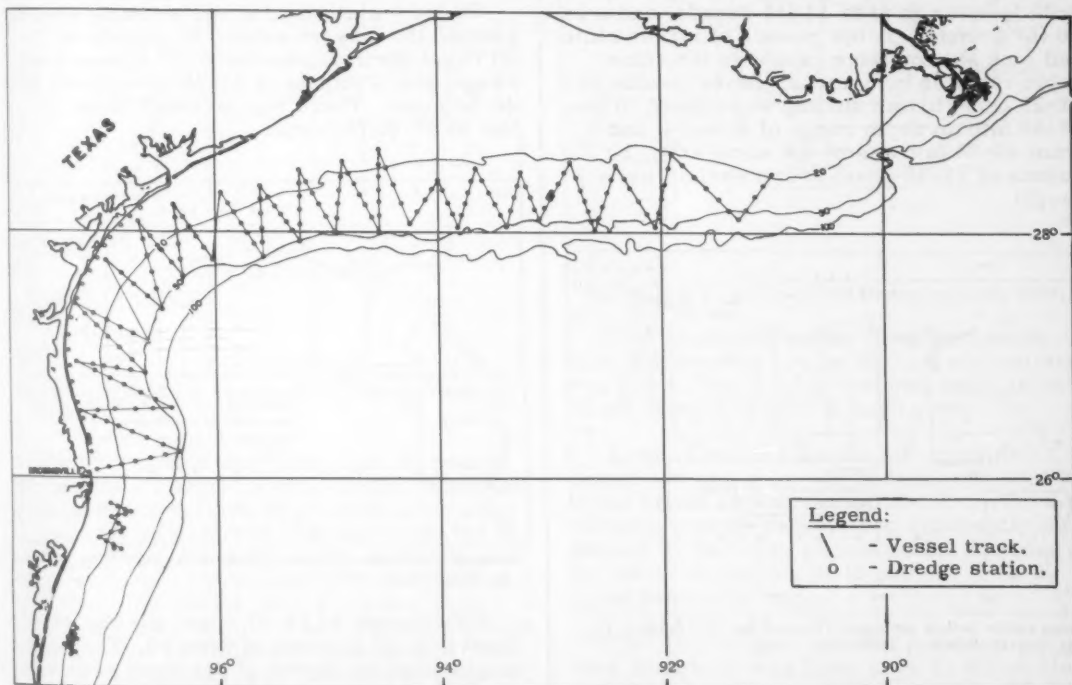
Note: See Commercial Fisheries Review, August 1962 p. 26.

CLAM AND SCALLOP DISTRIBUTION IN NORTHWESTERN GULF OF MEXICO STUDIED:

M/V "Oregon" Cruise 81 (September 11-October 2, 1962): To obtain seasonal information on offshore clam and scallop distribution along the Louisiana and Texas coastal areas were the main objectives of this cruise. The northwestern Gulf of Mexico was the general area explored during this 22-day trip by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Oregon. A total of 231 exploratory dredge hauls lasting from 15 to 30 minutes each were made during the trip.

these were generally small. Both species showed an apparent preferential depth range of 21 to 40 fathoms. Catch rates fluctuated widely on this exploratory cruise, and only general patterns of density were determined.

The frequent incidence of Gulf clams and paper-shell scallops in the middle shelf zone was observed during earlier shrimp explorations by the Oregon. A preliminary evaluation of meat quality and yield for both these species indicated a commercial potential, but concentrations and seasonal condition and yield would first have to be delineated.



Shows the station pattern for cruise 81 of the M/V Oregon (September 11-October 2, 1962).

Two hundred 5- and 6-foot tumbler dredge stations were made in the 4 to 80 fathom depth range between Ship Shoal, La., and Brownsville, Tex. An additional 31 tumbler dredge stations were made south of Brownsville off Laguna Madre, Mexico.

Paper-shell scallops (Amusium papyraceus) and deep-water Gulf of Mexico clams (Pitaria cordata) were observed throughout the survey area, although concentrations of

The relatively small individual catches made during cruise 81 were not significant enough for conclusive yield studies.

The vessel made port calls at Galveston on September 17, and at Brownsville on September 23.

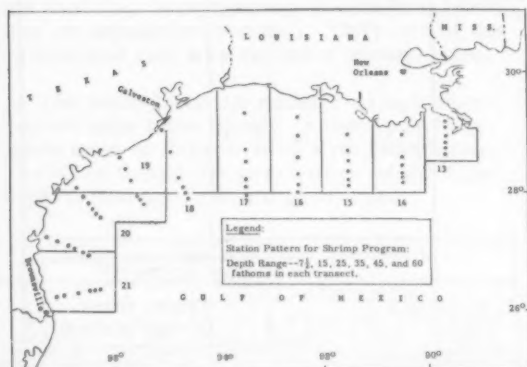


Gulf Fishery Investigations

SHRIMP DISTRIBUTION STUDIES:

M/V "Belle of Texas" Cruise BT-24 (July 26-August 1, 1962): Five statistical areas were covered on this cruise and a 45-foot shrimp trawl was used. One 3-hour tow was made in each of the 3 depth ranges in each area. The vessel (operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries in studying the distribution of shrimp in the Gulf of Mexico) returned to her home port on August 1.

Concentrations of medium brown shrimp counting 31-40 to the pound were found at 0-20 fathoms in area 14 (12 pounds) and area 16 (67 pounds). A few pounds of larger white and pink shrimp were caught in the same depth range in both areas. Seven pounds of 21-25 count brown shrimp were found in the 20-40 fathom depth range of area 14, and from 40-60 fathoms of the same area, 3 pounds of 12-15 count brown shrimp were caught.



Shows station pattern for cruise BT-24 of the M/V Belle of Texas, July 26-August 1, 1962.

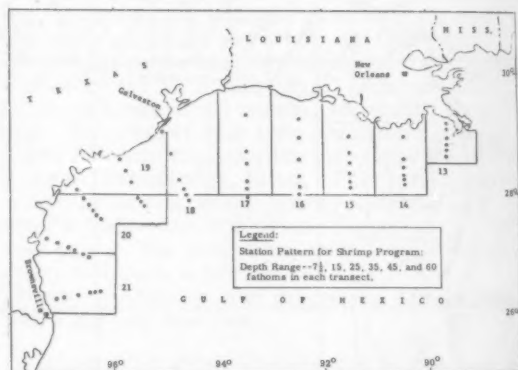
Area 16 yielded 12 pounds of 12-15 count brown shrimp from the 20-40 fathom depth range and 3 pounds of the same size and species from 40-60 fathoms, as well as the larger catch of medium shrimp from the shallower depth.

Tows in the 3 depth ranges of areas 13, 15, and 17 yielded small catches of various sizes of brown shrimp--in area 13, only 3 pounds of 12-15 count shrimp from 40-60 fathoms, and 10 pounds each of 41-50 count in 0-20 fathoms and 21-25 count from 20-40 fathoms.

In area 15, brown shrimp (13 pounds) 12-15 count were caught at 40-60 fathoms. Six pounds of 12-15 count brown was taken from area 17 evenly divided between 2 depth ranges; nothing was caught in 0-20 fathoms of that area.

M/V "Belle of Texas" Cruise BT-25 (August 9-14, 1962): In all areas covered by the M/V Belle of Texas during this cruise, nearly all brown shrimp were caught, except for less than one pound each of large white and pink shrimp. A 45-foot shrimp trawl was used, and one 3-hour tow was made in each of the 3 depth ranges.

Of the 4 statistical areas worked, area 18 yielded the largest catch--69 pounds of 31-40 count shrimp from the 0-20 fathom depth range, and 6 pounds of 21-25 count from 20-40 fathoms. There was no catch from the tow in 40-60 fathoms.



Shows station pattern for cruise BT-25 of the M/V Belle of Texas, August 9-14, 1962.

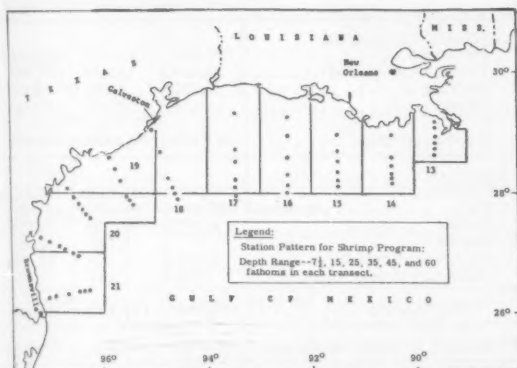
Nine pounds of 51-67 count shrimp were found in 0-20 fathoms of area 19. The amount caught in other depths of the same area were small--only one pound of 12-15 count at 20-40 fathoms, and 3 pounds of 9-12 count at the 40-60 fathom depth.

The catch from 0-20 fathoms in area 20 was 36 pounds of 51-67 count shrimp and only negligible amounts of white and pink shrimp. Larger shrimp of 15-20 count were caught in 40-60 fathoms of the same area.

Shrimp 12-20 count were found in area 21 at depths of 20-40 and 40-60 fathoms--3 pounds from each depth range. The tow in 0-20 fathoms yielded only one pound of small shrimp.

M/V "Belle of Texas" Cruise BT-27 (September 7-12, 1962): Shrimp catches by the research vessel Belle of Texas were almost negligible and confined mostly to small and medium brown shrimp from the 0-20 fathom depth range. The few pounds of white and pink shrimp caught in that depth range were all 21-25 count to the pound.

Each of the 4 statistical areas (18 through 21) covered on this cruise were off the coast of Texas from Galveston down to Brownsville. A 45-foot shrimp trawl was used, and one 3-hour tow was made in each of the 3 depth ranges of the areas worked.



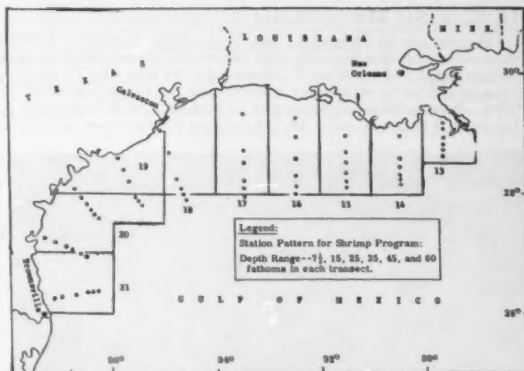
Shows the station pattern for cruise BT-27 of the M/V Belle of Texas, September 7-12, 1962.

Shrimp catches were less than 10 pounds per haul in all depth ranges except from 0-20 fathoms which yielded 80 percent of the total shrimp catch (less than 150 pounds) in the 4 areas covered. Shrimp caught in that depth range were all brown shrimp, counting mostly 41-50 to the pound, plus a scattering of white and pink shrimp. The 0-20 fathom depth range in area 21 yielded 30 pounds of 21-25 count brown shrimp, and 2 pounds of pink shrimp of the same size.

The largest catch of any area was slightly less than 50 pounds in area 19--44 pounds of 41-50 count brown shrimp and about 3 pounds of 21-25 count white and pink shrimp. The same area yielded only a handful of larger brown shrimp of 9-15 count from the 20-60 fathom depths. The other 3 areas worked on this cruise yielded an average of 9 pounds each of larger shrimp of 9 to 15 count, and

some 15-20 count from the 20-60 fathom depth ranges.

M/V "Belle of Texas" Cruise BT-28 (September 18-25, 1962): Large brown shrimp counting 12-20 to the pound predominated in catches by the research vessel Belle of Texas (operated by the Galveston Biological Laboratory of the U. S. Bureau of Commercial Fisheries) in studying the distribution of shrimp in the Gulf of Mexico.



M/V Belle of Texas cruise BT-28 (September 18-25, 1962).

Five statistical areas were worked on this 8-day cruise, and a 45-foot shrimp trawl was used. One 3-hour tow was made in each of the 3 depth ranges in each area.

Area 16 yielded the largest catch (43 pounds) of any area--75 percent was 12-15 count brown shrimp, most of it from the 20-40 fathom depth range. The depth up to 20 fathom in that area accounted for the rest of the catch consisting of 10 pounds of 15-20 count brown shrimp.

The next largest catch of a little more than 20 pounds was from area 17 which also yielded large brown shrimp counting 12-20 to the pound from all depth ranges. Less than one pound each of 12-15 count white and pink shrimp were caught in 0-20 fathoms of that area.

Shrimp catches in the other 3 statistical areas covered on the cruise were small, ranging from 12 to 18 pounds. These were mostly large shrimp from all of the 3 depth ranges except 0-20 fathoms which yielded very small amounts of 31-40 and 51-67 count

brown and white shrimp. There was also a catch of 7 pounds of 26-30 count brown shrimp from 0-20 fathoms in area 14.

Notes: (1) Shrimp catches are heads-on weight; shrimp sizes are the number of heads-off shrimp per pound.

(2) See *Commercial Fisheries Review*, October 1962 p. 21.



Industrial Fishery Products

U. S. FISH MEAL AND SOLUBLES:

Production and Imports, Jan.-Aug. 1962: Based on domestic production and imports, the United States available supply of fish meal for the first 8 months of 1962 was 33,135 short tons or 9.0 percent greater than during the same period of 1961. Domestic production was 16,299 tons or 7.3 percent lower, but imports were 49,434 tons or 34.0 percent greater



Fig. 1 - Steam power is needed in fishery byproducts plant. It is used to cook the raw fish, evaporate the water in making condensed fish solubles, and in many plants, for heating the meal dryers. This is a scene in a plant at Moss Point, Miss.



Fig. 2 - Raw fish at the dock of a menhaden industrial products plant in Moss Point, Miss. The large hose at the right is clamped to a standpipe through which the menhaden are pumped from the bottom of the hold when the vessel is unloaded.

than in the same 8 months of 1961. Peru continued to lead other countries with shipments of 146,195 tons during the first 8 months of 1962--52,462 tons above the imports in the same period of 1961.

The total United States supply of fish meal in calendar year 1961 of 529,100 tons exceeded the peak year 1959 when the quantity amounted to almost 440,000 tons.

The United States supply of fish solubles (including homogenized fish) during January-August 1962 was 9,378 tons more than during the same period in 1961. Domestic production increased 8.0 percent, but imports jumped 123.5 percent.

U. S. Supply of Fish Meal and Solubles, January-August 1961 and Total for 1961			
Item	Jan.-Aug.		Total 1961
	1/1962	1961	
	(Short Tons)		
Fish Meal and Scrap:			
Domestic production:			
Menhaden	175,649	193,177	247,551
Tuna and mackerel	13,728	13,458	21,243
Herring	2,627	4,462	5,268
Other	15,171	12,377	37,203
Total production	207,175	223,474	311,265
Imports:			
Canada	30,765	29,590	38,218
Peru	146,195	93,733	151,439
Chile	8,146	9,743	12,074
Angola	-	1,543	1,543
So. Africa Republic	9,184	9,756	13,026
Other Countries	706	1,197	1,545
Total imports	194,996	145,562	217,845
Available fish meal supply . .	402,171	369,036	529,110
Fish Solubles:			
Domestic production 2/ . . .	89,079	82,474	112,241
Imports:			
Canada	1,126	819	1,001
So. Africa Republic	1,091	946	1,351
Other Countries	2,801	480	4,387
Total imports	5,018	2,245	6,739
Available fish solubles supply .	94,097	84,719	118,980

1/ Preliminary.
2/ 50-percent solids. Includes production of homogenized condensed fish.

1/ Preliminary.

2/ 50-percent solids. Includes production of homogenized condensed fish.

U.S. FISH MEAL, OIL, AND SOLUBLES:

Production, August 1962: During August 1962, a total of 39,000 tons of fish meal and scrap and 4.3 million gallons of marine-animal oils were produced in the United States. Compared with August 1961, this was a decrease of 18,600 tons or 32 percent in meal and scrap production and 2.3 million gallons or 35 percent in oil yield.

Menhaden meal amounted to 33,400 tons--accounting for 86 percent of the August 1962 meal total. Oil from menhaden (3.9 million gallons) comprised 91 percent of the August 1962 oil production.

U.S. Production of Fish Meal, Oil, and Solubles, August 1962, with Comparisons

Product	August		Jan.-Aug.		Total
	1/ 1962	1961	1/ 1962	1961	1961
..... (Short Tons)					
Fish Meal and Scrap:					
Herring	788	1,179	2,627	4,462	5,268
Menhaden 2/	33,366	51,818	175,649	193,177	247,551
Sardine, Pacific	2/17	-	2/706	-	2,518
Tuna and mackerel	2/2,111	2,080	2/13,728	13,458	21,243
Unclassified	2,673	2,460	14,465	12,377	14,757
Total	38,955	57,537	207,175	223,474	291,337
Shellfish, marine-animal meal and scrap	3/	3/	3/	3/	19,928
Grand total meal and scrap	3/	3/	3/	3/	311,265
Fish solubles	15,883	16,883	81,014	73,777	100,551
Homogenized condensed fish	-	2,802	8,065	8,697	11,690
..... (Gallons)					
Oil, body:					
Herring	194,068	230,773	527,725	637,530	818,017
Menhaden 2/	3,918,942	5,955,991	20,761,354	24,061,049	31,355,570
Sardine, Pacific	2/1,373	-	2/20,484	-	86,167
Tuna and mackerel	2/77,246	82,352	2/402,799	375,177	762,509
Other (including whale)	134,337	353,251	606,394	1,046,199	1,386,542
Total oil	4,325,966	6,622,367	22,320,756	26,119,955	34,408,805

1/ Preliminary data.

2/ Includes a small quantity produced from thread herring.

3/ Not available on a monthly basis.

There were 15,900 tons of fish solubles produced in August 1962--1,000 tons below the same month of the previous year. There was no homogenized condensed fish produced in August 1962 as compared with 2,800 tons in the same month of 1961.

During the first 8 months of 1962, meal and scrap production totaled 207,200 tons--



Adjusting valve on a steam pump in the fish solubles unit of a fishery byproducts plant in Empire, La.

16,300 tons below the same period of 1961. The marine-animal oil yield totaled 22.3 million gallons--a drop of 3.8 million gallons as compared with the same period in 1961.

* * * * *

MAJOR INDICATORS FOR U.S. SUPPLY, SEPTEMBER 1962:

For the first nine months of 1962, United States fish meal and fish oil production was lower by 4.1 percent and 8.0 percent, respectively, as compared with the same period of 1961. Fish solubles production increased 8.3 percent.

Major Indicators for U. S. Supply of Fish Meal, Solubles, and Oil, September 1962					
Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
Fish Meal:					
Production 1/:					
November	-	10,058	8,725	10,797	9,749
October	-	16,852	24,455	22,026	11,630
September	31,800	28,642	36,239	36,874	33,185
Jan.-Aug.	207,175	220,559	180,152	191,089	144,415
Jan.-Dec. prelim.	-	289,039	257,969	275,396	216,510
totals 2/	-	311,265	290,137	306,551	248,140
Jan.-Dec. final tots.	-	311,265	290,137	306,551	248,140

(Table continued on following page)

Major Indicators for U. S. Supply of Fish Meal, Solubles, and Oil, September 1962 (Contd.)					
Item and Period	1962	1961	1960	1959	1958
..... (Short Tons)					
Imports:					
November	-	25,649	6,149	3,673	6,082
October	-	9,425	12,515	3,821	5,899
September	-	13,941	9,487	9,224	5,079
August	28,253	19,026	8,340	5,895	5,310
January-July	166,743	126,536	79,506	105,004	69,492
January-December	-	217,845	131,561	132,925	100,352
Fish Solubles:					
Production 3/:					
November	-	5,140	3,524	4,628	8,888
October	-	8,459	7,192	12,487	8,867
September	12,600	11,232	12,573	23,979	23,049
January-August	89,079	82,654	72,743	118,836	83,068
Jan.-Dec. totals	-	112,241	98,929	165,359	130,177
Imports:					
November	-	3,649	232	3,089	867
October	-	110	-	1,908	2,548
September	-	263	38	1,732	253
August	422	318	180	4,718	2,819
January-July	4,596	1,927	2,614	4,763	2,900
Jan.-Dec. totals	-	6,739	3,714	20,630	14,567
..... (1,000 Gallons)					
Fish Body Oils:					
Production:					
November	-	1,360	1,202	1,147	1,028
October	-	1,901	3,024	2,176	1,139
September	4,000	3,224	3,939	2,888	3,689
January-August 4/	22,321	25,392	17,482	16,187	13,726
Jan.-Dec. prelim. totals	-	33,471	26,690	24,418	21,625
Jan.-Dec. final totals	-	34,409	27,853	24,945	21,977
Exports:					
November	-	190	1,952	813	2,037
October	-	2,027	591	1,911	3,591
September	-	1,269	1,861	1,129	665
August	4,436	1,774	186	2,449	752
January-July	8,418	9,673	12,457	10,351	5,111
Jan.-Dec. totals	-	16,331	19,154	19,264	12,539

1/Does not include crab meat, shrimp and miscellaneous meals.

2/Preliminary data computed from monthly data. Fish meal production reported currently comprised 86 percent of the annual total for 1958, 90 percent for 1959, 89 percent for 1960, and 92 percent for 1961.

3/Includes homogenized fish.

4/Preliminary data computed from monthly data. Represents over 95 percent of the total production.

Note: Data for 1962 and 1961 are preliminary.



Nautical Charts

FOLDED INTRACOASTAL CHARTS FOR SMALL CRAFT NAVIGATION:

Plans to produce a "compact series" of Intracoastal Waterway Charts were announced by the Coast and Geodetic Survey, U. S. Department of Commerce, on October 7, 1962, following one of the most active boating seasons in the Nation's history. The plan is to produce a chart format that will not be awkward and unwieldy when used for small craft navigation.

New Intracoastal Charts will be accordian folded, measuring only 7-3/8 by 15 inches and easy to handle even in the smallest skiff or dinghy.

In recent years the largest market for Intracoastal Charts has been among the pleasure boatmen; in many areas, particularly along the Gulf Coast, however, commercial traffic in the waterway has contributed substantially to the economic stability of many coastal communities. In reshaping these charts for greater handling ease and utility, the Coast and Geodetic Survey has considered both the commercial boatman and the small craft operator. The chart quality has not been compromised in any way that would impair navigational safety.



WATCH HILL TO NEW HAVEN

RHODE ISLAND - CONNECTICUT



Long Island Sound

SMALL-CRAFT SERIES
CHARTS 116-1, 116-2, 116-3



U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY
WASHINGTON, D. C.

FIRST EDITION 1962

PRICE \$1.35

Although Intracoastal Waterway Charts are not new, having first been published in 1936, the Agency's cartographers and a cross-section of boat owners are quite enthusiastic about the folded format.

"We are providing the boat operator with much more than just a chart in this folded edition," commented the Chief of the Agency's Nautical Chart Division. "Within its protective wrap-around cover, the folio contains just about everything the mariner needs to know, including annual tide tables, a complete tabulation of supplies and facilities, direction and velocity of tidal currents, information on marine weather services, and much more—all in the package," he said.

The Intracoastal Waterway is a protected route, with some exceptions, for vessels between Boston, Mass., and the Rio Grande, a distance of approximately 2,900 miles. Navigation is restricted, however, by the limiting depths which in some places is only 5 feet. Generally the project depth is 12 feet or more. Long canals have been cut through dry land in several areas such as the canals between Norfolk, Va., and Albemarle Sound, N.C.

More than 60 Intracoastal Waterway Charts rim the Atlantic and Gulf Coasts of the United States from Norfolk, Va. to Brownsville, Texas.

The first remodeled charts are scheduled for issue early in 1963. These are No. 824, Sandy Hook to Little Egg Inlet,

New Jersey, and No. 829, Norfolk, Va., to Albemarle Sound, N.C.

With the exception of the New Jersey chart, reconstruction will begin at Norfolk and generally progress southward to Florida and into the Gulf of Mexico area.

It is contemplated that additional offshore hydrography will be added to the new editions, if space permits, to provide continuity for vessels plying between the waterway and the open sea. The expanded hydrography should render these charts more useful to the fishing fleets and the sports fishing industries.

In many ways, the new Intracoastal Chart folios will be comparable to the popular Small Craft Chart Series. Similar in size and utility, the new Intracoastals will be revised and published annually, usually to coincide with the boating season in each area.

Several years will be needed to convert all charts to the new compact format, to checkout the boating facilities through field inspection, and to assemble other complementary information planned for this unique Series. But Coast and Geodetic Survey chart-makers are going to keep a close watch on boating trends and developments in coastal areas and bolster the program where it is needed.



North Atlantic Fisheries

Exploration and Gear Research

OTTER-TRAWL NET WITH ELECTRIC FIELD TESTED:

M/V "Delaware" Cruise 62-9 (July 11-August 24, 1962): To test and evaluate the effect, if any, of an electric field upon the catch of a commercial otter trawl net when the field is used as an adjunct to the net, was the primary purpose of this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. The tests were conducted in marine waters and in areas and at depths where commercial species could be fished. Positive results encourage both further research into this principle of fishing and the development of specific gear by which this method might be applied within various segments of the fishing industry. The electrical equipment used was experimental in nature and built by a Lewes, Del., firm as a result of their research in the field of electrical fishing equipment.

A No. 41 large mesh (4-1/2 inch internal measurement) polypropylene net was equipped for electric fishing with a system designed primarily to immobilize fish in the path of the advancing trawl. Comparative tows were made using this net with and without the electric field during alternate tows. Towing was conducted between positions determined by Loran bearings and

along depth contours in an area long enough to include two consecutive tows. By towing back and forth in the designated area, and alternating tows using electricity with tows not using electricity, the same area was fished by both methods during various phases of tide and other changes. The effect of variables were eliminated or minimized as much as possible. Electrical values were kept nearly alike although minor differences, due to changes in the configuration of the net and consequent small variations in the distance between electrodes, could not be controlled.

All fish caught were identified and counted. A volumetric measure was taken on all commercial species when the catch numbers were large enough to make this feasible.

Tests were conducted with the anodes in two positions: (1) grouped around the low voltage transformers and laced to the footrope and netting of the lower wings and bottom belly, and (2) laced to the headrope and netting of the upper wings and square. During both test series, the low voltage transformers were shackled to the footrope and the cathodes were laced to the netting in the afterpart of the lower belly.

Comparative catch results with anodes positioned on the footrope, and on the headrope, are shown in tables 1 and 2.

Grouped Species of Fish	Without Electric Field		With Electric Field		Comparison to Catch Made without Electric Field
	Total No. Fish Caught	Mean No. Fish Per Tow	Total No. Fish Caught	Mean No. Fish Per Tow	
Cod and haddock	982	48.7	1243	55.9	127.3
Flatfish (gray sole, dab, yellowtail, blackback or lemon sole)	730	31.7	1503	68.3	215.5
Trash fish (sea raven, sea pout, monkfish, eelpout)	141	6.1	353	11.5	188.5
Cartilaginous fish (dogfish, skate)	280	11.3	245	11.1	28.2
Squid	360	18.7	747	24.0	214.8
Fish normally escaping large-mesh nets (herring, shad, whiting, red hake)	297	13.9	1643	74.7	379.1

Note: Other commercial species were caught in too few numbers to use for comparison.

Grouped Species of Fish	Without Electric Field		With Electric Field		Comparison to Catch Made without Electric Field
	Total No. Fish Caught	Mean No. Fish Per Tow	Total No. Fish Caught	Mean No. Fish Per Tow	
Cod and haddock	272	14.3	509	29.9	209.1
Flatfish (gray sole, dab, yellowtail, blackback or lemon sole)	515	27.1	882	51.9	121.5
Trash fish (sea raven, sea pout, monkfish, eelpout)	107	5.6	198	11.7	208.9
Cartilaginous fish (dogfish, skate)	128	6.7	204	12.0	173.1
Squid	278	33.7	440	31.2	59.1
Fish normally escaping large-mesh nets (herring, shad, whiting, red hake)	217	11.4	772	45.4	299.3

Note: Other commercial species were caught in too few numbers to use for comparison.

The catch results from comparative tows made with the anodes in one position were considered separately from the catch results made with the anodes in the other position. That was to indicate the effect, if any, of the change in anode positions upon the quantity of fish caught. During the first series of tests, made with the anodes on the footrope, 45 successful tows were completed. Of that number, 22 were with the electric field and 23 were without the electric field. During the second series, made with the anodes on the headrope, 36 successful tows were completed. Of that number, 17 tows were with the electric field and 19 tows were without the field. Due to the unequal number of tows, the gross number of fish caught by each method was not a good basis for comparison. The average number of each species of fish caught per tow (mean) by each method was used for comparison purposes. The tables show the species grouped into arbitrarily-chosen categories instead of individually. Irregularities in the abundance and/or availability of fish may cause considerable variation in catch results; the number of tows made (a total of 81) was too few to expect definite values to be determined. In general, the results may be considered indicative of final values that could be determined through extended testing.

Evaluation of this method of fishing, and the gear and equipment used during the tests, may be made from several directions. As the electrical equipment and accessory gear were experimental in nature, a number of difficulties, breakdowns, and other problems were to be expected. Nevertheless, with the exception of several components, the equipment performed satisfactorily. A more detailed description of the gear and component performance together with a more complete analysis of catch data is to be published at a later date.

Phase III of cruise 62-9 by the Delaware was devoted to herring sampling on Georges Bank under the direction of the Bureau's Boothbay Harbor Biological Laboratory.

COMMERCIAL FISHING POTENTIAL OF OCEAN PERCH OFF NOVIA SCOTIA STUDIED:

M/V "Delaware" Cruise 62-11 (September 3-October 3, 1962): Bottom trawling operations to investigate the commercial potential

of ocean perch (Sebastes marinus) in waters deeper than those usually fished by commercial trawlers were conducted on the Continental Slope 100 miles north of Halifax, Nova Scotia, during this cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel Delaware. A total of 14 1-hour tows were completed in depths ranging from 175 to 525 fathoms on a 55-mile section of the slope.

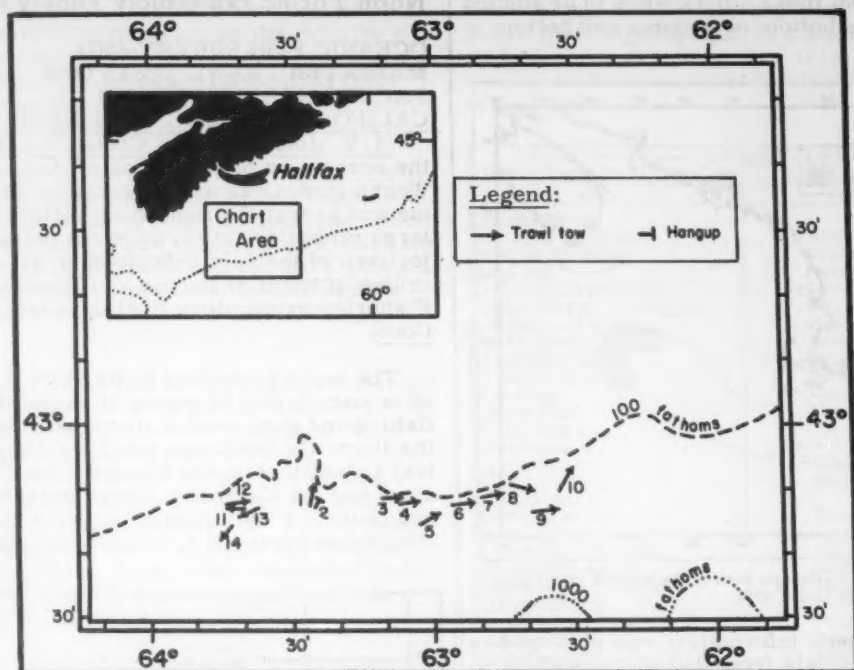


One of the larger catches of ocean perch buoys the cod end to the surface during haulback aboard the exploratory fishing vessel Delaware on cruise 62-11.

The four largest catches (2 estimated at 3,000 pounds and the other 2 at 2,000 pounds) were made at a mean depth of 300 fathoms. The larger catches were not comparable to the size of commercial catches, but they indicated a resource of large ocean perch (about 2-3 pounds each) at those depths and show some promise for projected explorations of the Continental Slope area.

Fishing gear used during the cruise consisted of a roller-rigged No. 41 manila net with 30 floats on the headrope, 5-fathom legs and 5-fathom ground cables. The ground cables were removed after the third tow to prevent gear damage from hang-ups on the extremely uneven bottom. There was only minor damage to fishing gear during the cruise and little time was lost making repairs. While average towing time from hook-up to knockout was approximately one hour, longer setting and hauling-back time in deep water required an over-all time of two hours on each tow.

Other commercial species caught in less than significant numbers included whiting



Cruise 62-11 of the exploratory fishing vessel Delaware investigated the commercial potential of ocean perch on the Continental Slope off Nova Scotia.

(silver hake), white hake, squirrel hake, cusk, Atlantic cod, American plaice (dab), Atlantic halibut, Greenland halibut, witch flounder (gray sole), and the red crab.

Preliminary identification of specimens preserved for continuing study included grenadiers (Macrouridae), snipe eels (Nemichthyidae), black dogfish (Centroscyllium fabricii), blue hake (Antimora rostrata), spiny eel (Notocanthus sp.), 2 specimens of blue whiting (Gadus poutasou), and Stomias sp.).



North Atlantic Fisheries Investigations

DISTRIBUTION AND ABUNDANCE STUDIES OF SEA SCALLOPS ON GEORGES BANK CONTINUED:

M/V "Delaware" Cruise 62-10 (September 11-20): To collect data on the distribution and abundance of sea scallops in the area from Northern Edge to the Southeast part of Georges Bank was the purpose of this cruise by the research vessel Delaware of the U. S.

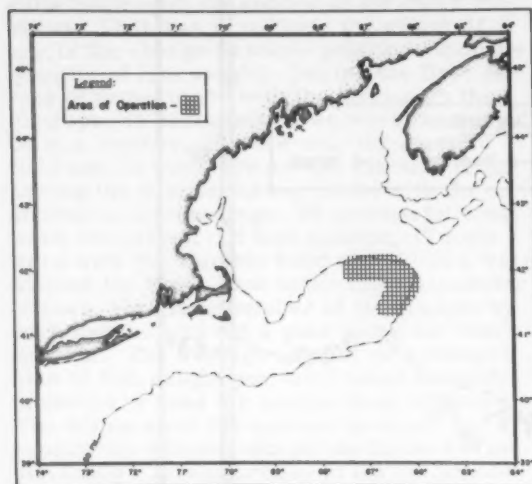
Bureau of Commercial Fisheries. The cruise was part of a continuing study to determine the population abundance and length composition of sea scallops on the offshore bank. Samples taken of Georges Bank sea scallops were to be used for comparison with similar samples collected previously.

A total of 29 unit areas were sampled during the cruise. Each unit consisted of 6 stations. Live scallops and clapper shells from 199 tows at 174 stations were measured, and condition of spawning observed. A 10-foot standard dredge with a 2-inch ring bag was used, and each tow lasted 10 minutes. The distance of each tow was measured with a standard odometer, and a new experimental odometer was tested simultaneously.

Samples of scallops were brought back to the laboratory for length-weight rations, aging, and spawning studies. These will be reared in specially-designed tanks to conduct biological research on growth rates.

Five additional 5-minute tows with a 30-inch Digby-type dredge having a 1/2-inch mesh liner were made at designated stations.

Samples from those 5 tows were to be studied to determine bottom organisms and bottom types.



Sea scallop survey on Georges Bank by the research vessel Dela-ware, September 11-20, 1962.

Hydrographic information was collected at hourly intervals from 210 stations while steaming to and from Georges Bank.

Note: See Commercial Fisheries Review, July 1962 p. 33.

* * * * *

FLUKE TAGGING EXPERIMENT:

About 1,000 fluke were tagged in September 1962 at inshore locations between Point Judith, R. I., and Block Island. This tagging experiment was conducted by biologists of the U. S. Bureau of Commercial Fisheries Biological Laboratory, Woods Hole, Mass. Tagged fish returned from this experiment will complement the results of previous offshore tagging east of Hudson Canyon, which showed a summer inshore movement to Long Island and southern New England fishing grounds.

The recent fluke tagging experiment will add further information on the geographical limits of the fluke population which appears to inhabit the northern part of the Middle Atlantic Bight.

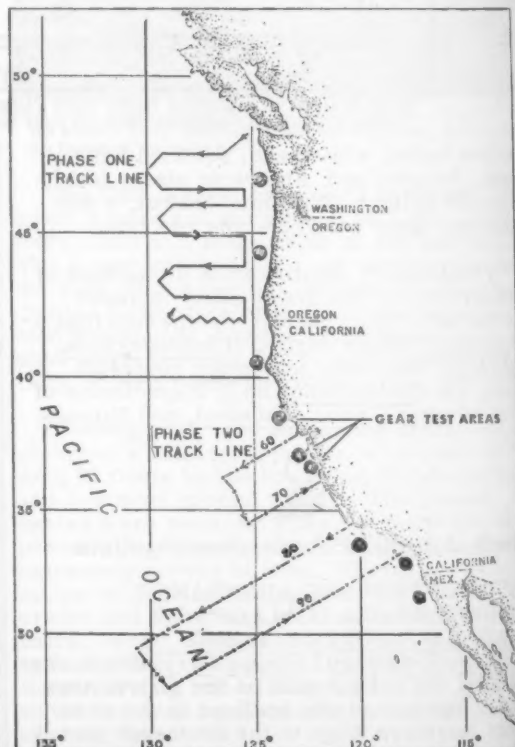


North Pacific Exploratory Fishery Program

OCEANIC FISH SURVEY AND MIDWATER TRAWL TESTS OFF PACIFIC NORTHWEST AND CALIFORNIA COASTS CONTINUED:

M/V "John N. Cobb" Cruise 55: To study the oceanic or offshore fish off the coasts of Washington, Oregon, and southern California and to test the fishing capabilities of a large midwater trawl, were the primary objectives of the July 9-September 21, 1962, cruise of the U.S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb.

The vessel returned to its base at Seattle after completing 11 weeks of exploratory fishing and gear testing in cooperation with the Bureau's San Diego and La Jolla Biological Laboratories, the Oregon Fish Commission, and the California Department of Fish and Game. Total mileage traveled during the cruise exceeded 8,000 nautical miles.



M/V John N. Cobb Cruise 55 station pattern (July-September 1962).

Primary objectives of the cruise were: (1) To obtain information on the relative abundance and distribution of albacore tuna by systematic sampling with trolling lines and correlation with attendant oceanographic conditions; (2) sampling of offshore waters to determine the relative abundance of all pelagic species at predetermined stations by conducting oblique tows from 220 fathoms to the surface, using a recently developed giant midwater trawl (Cobb pelagic trawl, Mark II); and (3) testing the utility of the Cobb pelagic trawl as a biological sampling tool and its efficiency for possible commercial application.

Regions surveyed during phase I (albacore trolling) extended from 48° N. Lat. to 42° N. Lat. and seaward from the coasts of Washington and Oregon to 130° W. Long. During phase II, waters between 38° N. Lat. and 27° N. Lat. extending seaward from the California and Mexican coasts to 130° 36' W. Long. were surveyed. During phase III, tests of the Cobb pelagic trawl were conducted in the coastal waters off Mexico, California, Oregon, and Washington.

Albacore Trolling (Phase I): Trolling was conducted during daylight hours along predetermined track lines with generally good results. A total of 235 albacore tuna was taken. All albacore in suitable condition (total of 150) were tagged and released. Tuna not in suitable tagging condition were frozen for future technological studies. Experimental freezing procedures were tested by a cooperating scientist from the Bureau's Technological Laboratory, Seattle, Wash.

Attendant oceanographic data were collected by a cooperating scientist from the Bureau's Biological Laboratory, San Diego, Calif.

Regions surveyed during phase I extended from 48° N. latitude to 42° N. latitude and seaward from the coasts of Washington and Oregon to 130° W. longitude.

Offshore Pelagic Trawling (Phase II): Forty-four stations were occupied off southern California and Mexico using the John N. Cobb's midwater trawl. Oblique tows from 220 fathoms to the surface were made at each station during daylight hours. At least one of each series of night tows was made on the surface. With the exception of one night surface tow in which 24 horse mackerel

were taken, catch rates in phase II were poor. Echo-soundings taken at all stations indicated no fish concentrations. Scatters noted were typical of those associated with the deep scattering layer.

List of Fishes Taken by the John N. Cobb Pelagic Trawl During Phases II and III of Cruise 55, August-September 1962	
Scientific Name	Common Name
<u>Vinciguerria</u> sp.	
<u>Tetrarance californica</u>	Electric ray
<u>Palometa simillima</u>	California pompano
<u>Brama raii</u>	Pomfret
<u>Tarletonbenia crenularis</u>	Lanternfish
<u>Trachipterus rex-salmonorum</u>	King of the salmon
<u>Argyropelecus lychnus</u>	Hatchetfish
<u>Seriola dorsalis</u>	Yellowtail
<u>Leuroglossus stilbius</u>	No common name
<u>Caulolepis longidens</u>	No common name
<u>Mola mola</u>	Ocean sunfish
<u>Diaphus theta</u>	Lanternfish
<u>Melamphaes</u> sp.	-
<u>Argentinidae</u> sp.	-
<u>Regalecidae</u> sp.	King of the herrings
<u>Electrona arctica</u>	Bigeye lanternfish
<u>Idiacanthidae</u> sp.	-
<u>Bathylagus milleri</u>	No common name
<u>Gonostomatidae</u> sp.	-
<u>Glyptocercus zachvatkini</u>	Rex sole
<u>Citharichthys sordidus</u>	Mottled sandbar
<u>Alepocephalus tenebrosus</u>	No common name
<u>Malacosteidae</u> sp.	-
<u>Merluccius productus</u>	Hake
<u>Sardinops sagax</u>	Pacific sardine
<u>Sarda chiliensis</u>	Bonito
<u>Pneumatophorus diego</u>	California mackerel
<u>Roncadora steenisi</u>	Spotfin croaker
<u>Sphyrna argentea</u>	Barracuda
<u>Aetobatus californicus</u>	Whip ray
<u>Sebastes paucispinis</u>	Bocaccio
<u>Symphurus atricaudus</u>	Tongue sole
<u>Porichthys notatus</u>	Midshipman
<u>Ichthyichthys lockingtoni</u>	Brown rudderfish
<u>Oncomyrus tachyura</u>	King salmon
<u>Sebastes flavivittatus</u>	Yellow-tailed rockfish
<u>Squalus acanthias</u>	Dogfish shark
<u>Sebastes brevispinis</u>	Silvergray rockfish
<u>Sebastes ruberrimus</u>	Turkey-red rockfish
<u>Trachurus symmetricus</u>	Horse mackerel
<u>Engraulis mordax mordax</u>	Anchovy
<u>Prionace glauca</u>	Blue shark
<u>Sebastes goodei</u>	Chili pepper
<u>Anoplopoma fimbria</u>	Sablefish
<u>Tactostoma macropus</u>	Arrowfish
<u>Symbolophorus californiae</u>	Lanternfish
<u>Lampamctus leucopaeum</u>	Lanternfish
<u>Lampamctus ritteri</u>	Lanternfish
<u>Hygophum</u> sp.	Lanternfish
<u>Diogenichthys atlanticus</u>	Lanternfish
<u>Notoscopelus resplendens</u>	Lanternfish
<u>Ceratoscopelus townsendi</u>	Lanternfish
<u>Scomber japonicus</u>	No common name
<u>Anoplogaster</u> sp.	-
<u>Tarandichthys</u> sp.	-
<u>Cyclothone microdon</u>	Veiled anglemouth

During the latter half of phase II, offshore stations were occupied simultaneously by the Bureau's research vessel Black Douglas and the John N. Cobb. Observations of attendant oceanographic conditions and comparison tows with plankton and stramin nets were made by the Black Douglas.

A correlation of relative effectiveness of the three sampling gears (midwater trawl, plankton net, and stramin net) will be attempted in the near future.

During phase II, waters between 38° N. latitude and 27° N. latitude extending seaward from the California and Mexico coasts to 136° 36' west longitude were surveyed.

Gear Tests (Phase III): During the early part of Phase III, 13 surface tows and 3 mid-depth tows using the John N. Cobb's midwater trawl were made in nearby waters off San Diego. During the latter part of Phase III, 11 drags (3 near surface and 8 at mid-depth) were made off the coasts of California, Oregon, and Washington. A total of 56 different species of fish were taken in the midwater trawl during the tests. The largest catches were made about 10 miles north of Heceta Bank, Ore., where a catch of 1,375 pounds of sablefish and 463 pounds of hake was made at 95 fathoms and a catch of 1,863 pounds of hake was made at 102 fathoms. A catch of 1,000 pounds of anchovy was taken at 42 fathoms about 30 miles south-southwest of San Francisco, Calif. The anchovy catch was estimated at 8,000 pounds when the net surfaced, but most of the catch escaped through the meshes of the cod end as the gear was hauled in.

Utility of the midwater trawl for gross biological sampling was demonstrated during the cruise by the wide variety of specimens taken. Commercial utility of the gear for capture of surface schools of fish was not proved, but commercial use of the gear for capture of midwater schools of fish shows considerable promise. A few drags made on good echo-sounding indications in midwater produced fair amounts of fish. Additional experiments using the gear on known fish concentrations will be required before the commercial potential can be determined.

SHRIMP DISTRIBUTION OFF VANCOUVER ISLAND STUDIED:

M/V "John N. Cobb" Cruise 56 (October 15-November 16, 1962): To conduct shrimp explorations in the international waters off the west coast of Vancouver Island, British Columbia, was the purpose of this 5-week cruise by the U. S. Bureau of Commercial Fisheries exploratory fishing vessel John N. Cobb. The main objective was to locate po-

tential commercial shrimp fishing grounds in the area from Cape Beale to Cape Cook off Vancouver Island.

During the cruise, records were to be kept of the general topography of the ocean bottom, and oceanographic and meteorological conditions. The size and sex composition of the shrimp populations were to be determined, together with other pertinent information.

Methods of operation on this cruise included the application of transects using sonic equipment so as to determine the general bottom characteristics, and whether the area explored would be suitable for trawling. In areas where the bottom could be trawled, it was planned to make a series of tows with a Gulf of Mexico shrimp trawl in order to assess the distribution and abundance of shrimp.

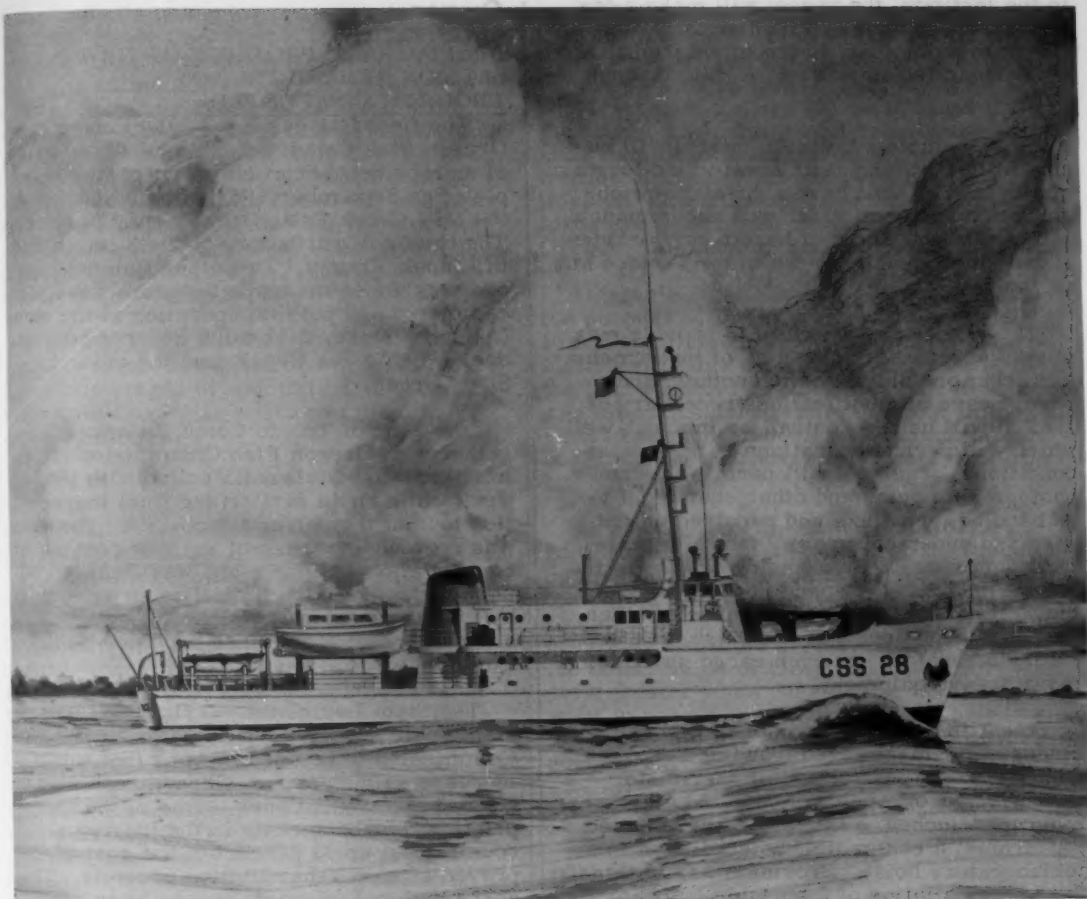


Oceanography

NEW COAST AND GEODETIC SURVEY RESEARCH VESSELS "PEIRCE" AND "WHITING":

The new U. S. Coast and Geodetic Survey research vessels Peirce and Whiting will be used for hydrographic and oceanographic work along the southeastern Atlantic Coast of the United States and in the Gulf of Mexico. The Peirce was launched October 15, 1962, at Point Pleasant, W. Va., on the Ohio River. The Whiting, an identical sistership, was expected to be launched in November 1962. The combined cost of the two vessels, which were built under one contract, amounted to \$3,733,040. The new vessels will replace older vessels of the Coast and Geodetic Survey.

The Pierce measures 163 feet in length and has a displacement weight of 760 tons. It is equipped with controllable pitch propellers and two 800 ship hp. Diesel engines producing a total of 1,600 hp. Cruising speed is 12.5 knots. It has the most modern electronic and navigational equipment. The Peirce has an oceanographic laboratory as well as depth recorders, hydrographic winches, and other survey tools. The ship's reinforced steel hull will permit her use in Alaska and in the ice-covered waters of the Arctic if necessary. It will have a complement of 6 officers and 30 crewmen.



Artist's drawing of the Peirce, one of the new Coast and Geodetic Survey vessels.

Following the launching in West Virginia, the Peirce cruised down the Ohio and Mississippi Rivers for trials and commissioning in the Gulf of Mexico. The Peirce and her sistership will be assigned to Atlantic Coast ports near their working grounds thus saving many valuable hours in transit.

The Peirce was named to commemorate Charles Sanders Peirce, the noted 19th century American scientist and logician, and an employee of the Coast and Geodetic Survey between 1860 and 1890. His research and development in pendulums, map projections, and gravity made a lasting contribution to the Bureau's scientific standing. The Peirce will replace the Coast and Geodetic Survey

vessel Gilbert, a 77-foot research vessel built in 1930 which is now in a poor state of repair.

NEW OCEANOGRAPHIC RESEARCH VESSEL NEAR COMPLETION:

A new oceanographic research vessel, the Atlantis II, was launched at the Maryland Shipbuilding and Drydock Company in Baltimore, Md., on September 8, 1962. The vessel, which was designed and built for the Woods Hole Oceanographic Institute with funds from the National Science Foundation will be completed about the end of 1962 at a cost of around \$3.9 million. After delivery

to the Institute, the vessel will make a few short trial cruises and then go to the Indian Ocean to participate in the International Indian Ocean Expedition which runs through 1964.

When completed, the Atlantis II will be about 210 feet long, with a waterline length of 195 feet. It will have a special bow observation chamber which will accommodate two observers, and will have 6 ports to view ahead, down, and up to the water surface at the stern.

The vessel was designed to provide maximum versatility in changing of instrumentation from one discipline to another, and to permit ease of modifications necessary at sea. It will have a central, or internal, well which will permit operations in higher sea conditions. The well will permit electronic, photographic gear, and other equipment to be handled, serviced, and repaired on the wire and under cover away from ice, rain, wind, and spray. By changing or closing the bottom opening, the space in the center of the well can be used for a number of other purposes such as a fuel tank, fish tank, wet or dry laboratory, or even cargo space for extra heavy equipment.

Scientific handling gear of the vessel includes a steam-powered trawl or deep-sea winch, a towed instrument or thermistor winch, 2 hydrographic winches, 2 bathythermograph winches, a hydraulically-actuated "A" frame, a center well hoist, and an interlaboratory hoist. Provision was also made for the installation of 2 portable laboratories, 1 on the main deck and the other on the upper deck of the vessel.

The vessel is designed to do effective all-weather oceanographic research work ranging from fringe ice areas to the tropics, and will be able to handle more than one scientific discipline on a given cruise. All living quarters, public rooms, laboratories, and other work facilities will be air conditioned. It will carry a complement of 25 scientists and a crew of 28, including officers.

The new research vessel was not built to replace the present Atlantis (I), according to the June 1962 issue of Oceanus published by the Woods Hole Oceanographic Institute, which stated that the two ships will be operating at the same time.

RA

Oregon

FISH PASSAGE PROJECTS OF NEW SALMON REHABILITATION PROGRAM COMPLETED:

The first fish passage project under the Oregon Fish Commission's new 60/40 coastal salmon rehabilitation program was completed in September 1962 with dedication of the Mill Creek Falls fishway on Mill Creek. The Creek is a tributary of the Siletz River in Lincoln County. Two other fish passage projects under the same program were also completed and put into operation at the same time. Both are on Yaquina River tributaries, one on Little Elk Creek, and the other on Sloop Creek.

The Port of Toledo Commissioners, together with Oregon Fish Commission officials, expressed full satisfaction with the work while on an earlier and final inspection tour of the passage facilities. The work was done under terms of the new cost-share conservation program, and was financed 60 percent from funds specially appropriated by the last session of the State Legislature and 40 percent from funds provided by the Port of Toledo.

The State Legislature during its 1960 session, made \$120,000 available to the Fish Commission to be used in work that would increase salmon and steelhead production in coastal streams. Under terms of the appropriation, local interests in the individual counties put up 40 percent of the cost of approved stream rehabilitation projects. The share by local interests was to be in cash, or in equipment rental, labor, or materials.

The Mill Creek project involved blasting a fish ladder out of bedrock where a nine-foot waterfall had blocked passage of anadromous fish during most water stages. A concrete retaining wall was also constructed to prevent flooding out of the fishway during high water. Some silver salmon and a limited number of chinooks had been able to negotiate the falls during especially favorable water flows, but production above the falls had been limited and sporadic. Ten miles of spawning and rearing area for both salmon and steelhead has been made permanently available by the ladder.

On Little Elk Creek, rock quarry operations some years ago created falls that were impassable to anadromous fish. The Fish

Commission's laddering project has made available above this stream block an area of gravel sufficient to accommodate over 300 spawning salmon. The new Sloop Creek facility also makes available to salmon and steelhead a sizable reach of prime spawning gravel. The work at both Mill Creek and Sloop Creek was done by a Toledo contractor, while the Little Elk Creek job was handled by a local crew with Fish Commission equipment and supervision. The cost of the three projects totaled \$8,250, with the Port of Toledo providing \$3,300.

Numerous other projects under the 60/40 coastal salmon rehabilitation program are in various stages of negotiation and planning in Lincoln County as well as in the other coastal counties.

OBSTACLE TO OCEANBOUND MIGRANT SALMON REMOVED:

The stranding of downstream migrant salmon and steelhead in river bank potholes on the east bank of the Willamette River in Oregon City's Clackamette Park, has long been an annual occurrence until recently. In September 1962, an engineering crew of the Oregon Fish Commission worked with a bulldozer and dump trucks to remove the virtual death-trap for these migrant fish.

Young steelhead and salmon were stranded each year in the Clackamette River bank potholes, especially during the late winter and spring months when downstream migration is in full swing. The frequent wide fluctuations of water level along the Willamette River added even more to the problem. Depletion of oxygen in the potholes, or actual drying up of the pools was responsible for heavy mortalities of the oceanbound migrant fish.

PUBLIC HEARING HELD ON DUNGENESS CRAB FISHING REGULATIONS:

A public hearing on regulations governing Oregon's multimillion dollar crab fishery was held before the Oregon Fish Commission in Portland on October 10, 1962. The hearing was the result of widespread interest in the State's crab fishing regulations for the coming season. Findings of the Fish Commission's crab biological investigations were presented at the hearing.

Crab fishing regulations have for some time been a matter of deep concern to the fisheries agencies in California and Washington, as well as in Oregon. The coastwide problems associated with the management of the highly-important commercial dungeness crab fishery have been a major part of activities of the Pacific Marine Fisheries Commission, a coordination agency supported by funds provided by the fisheries agencies of Oregon, Washington, and California.

Oregon's State Fisheries Director said the purpose of the hearing was to allow the Fish Commission to evaluate all the information available as a basis for formulating the best possible regulations. The hearing was also considered timely in view of the Pacific Marine Fisheries Commission's annual meeting which was to be held in Seattle later in October.

In emphasizing the importance of Oregon's commercial crab fishery, the Director pointed out that Oregon crab landings during the past 8 years have averaged 9 million pounds a season with an ex-vessel value of nearly \$1.3 million a year. He added that the dollar value of Oregon's crab fishery is even greater when considering the investment in processing equipment and salaries to people in other segments of the crab industry.



Oysters

LONG ISLAND SOUND OBSERVATIONS ON SPAWNING AND SETTING AS OF SEPTEMBER 19, 1962:

Setting of Oysters: Setting of oysters continued at all stations as of September 19, 1962. It was the heaviest, however, at two stations in the Bridgeport area. This second wave of setting, which began about August 17 and was still going on as of September 19, although at a reduced rate, added a sufficient number of spat to those of the first wave to record 1962 as a year of good oyster setting in Long Island Sound, reports the U.S. Bureau of Commercial Fisheries Biological Laboratory, Milford, Conn.

At least one station in each major area caught a set of commercial importance. In New Haven an especially heavy set occurred at one station and in Bridgeport at two stations. If all spat survived, the station at New Haven would show approximately 45 young oysters on the inside surface of each cultch shell, while at one of the two stations at Bridgeport, this number would be approximately 54 per shell. Unfortunately, the majority of the young oysters of the Bridgeport area died within the first few weeks after setting and, regardless of the heavy initial set, many shells examined in September were blank.

This mortality is due to several causes, some of which we know and understand, such as predation by small drills,

recently-set flat worms (*Stylocha*, the great killer of young oysters), and to some extent, by starfish. Other causes, however, are still obscure and undetermined but we, tentatively, assume that they are bacterial or virus diseases or parasites. A close observation is being kept on the condition of the spat and anything suspicious in their appearance or behavior is investigated by our microbiologist. As has been reported in some of our scientific publications, we have isolated a number of bacteria that kill larvae and young spat, and we think that similar organisms may be involved in killing larvae and spat under natural conditions.

Contrary to the heavy mortality in the Bridgeport area, the oyster set of the first and second waves in New Haven Harbor was doing remarkably well. Examination of the material collected showed very rapid growth of young oysters. As determined last year, on the basis of the new experiment conducted this summer together with F. Mansfield & Sons Oyster Co., in New Haven Harbor, there is strong evidence that Polystream-treated shells collected more oyster spat than untreated shells and that the latter were considerably more fouled with different organisms, especially *Crepidula*, than the treated ones. Although the odor of Polystream can still be detected on the treated shells, the growth of young oysters on them seems to be better than on the untreated shells.

Perhaps treating of shells with different chemicals will prevent such undetermined mortalities as are occurring now in the Bridgeport area. This will have to be ascertained by a series of well-planned, critical experiments. Nevertheless, as the intensity of this year's setting has demonstrated, there is nothing wrong with Connecticut oyster-producing waters and, therefore, the industry should not only survive but, by using modern methods (including artificial methods of propagation, new methods to control predators and competitors, and chemical treatment of cultch) should become even more productive than in the past.

Setting of Starfish: While setting of oysters was heavier during the second part of the summer, setting of starfish was lighter. After about August 13 there was virtually no setting in the Milford and, especially, New Haven areas, although in Bridgeport recently-set starfish could occasionally be found on the collectors. The same as last year, two stations in the Bridgeport area led in the number of starfish set for the season, while one station (located in deep water in Milford) was also an area of relatively heavy setting.

Since this year the majority of the starfish set early in the season, largely between July 1 and 15, these predators have already grown to a comparatively large size and are, therefore, capable of considerable destruction. Because, in addition to this increase in population, the numbers of adult starfish existing prior to the spawning season were very large, the oyster industry of Connecticut is still facing the difficult problem of controlling these extremely numerous enemies.

Progress in Development of Chemical Control of Shellfish Enemies: Last week we met with representatives of the Food and Drug Administration to discuss various aspects of our method for control of shellfish enemies and ascertain what steps are needed to clear this method for the industry's use. Representatives of Food and Drug are apparently satisfied with our methods for analysis of chlorinated benzenes and Sevin, the substances that constitute our formula. Moreover, on the basis of our analyses of the selected samples we were able to show the experts that no chemical residue is found in meats of clams and oysters collected (120 days after treatment) from lots which were treated with 3 to 5 yards of sand-Polystream-Sevin mixture. Many samples collected from the same lots after periods shorter than 120 days were also free of any traces of the chemicals.

Regardless of the extremely gratifying results obtained so far, it has been decided that we will analyze an additional series of samples before forming final conclusions. This series of analyses is now in progress and we hope that within several months we shall finally be able to offer the industry an extremely effective and commercially-feasible method for

control of drills and other enemies. (*Bulletin No. 5*, September 19, 1962.)

MARYLAND OBSERVATIONS ON SPAWNING AND SETTING AS OF SEPTEMBER 18, 1962:

Late summer weather remained dry with salinities above normal. Temperatures were a little below the seasonal average and resulted in better mixing of the upper layers of water so that oxygen poor or "stagnant" water conditions generally were confined to greater depths than usual for the time of year. No marked cooling of the water had occurred and water temperatures for mid-September were near the normal of about 75° F. for September 17 at Solomons, according to the September 18 "Special Oyster Bulletin" of the Maryland State Chesapeake Biological Laboratory, Solomons.

The fungus *Dermocystidium* continued to infect oysters to a greater extent than usual in areas from Solomons down through the saltier waters of the bay area. Peak losses from the parasite occur during late summer and through September. The extent of the losses had not yet been measured but may be high among crowded and old oysters in high salinity areas. Recovery occurs when the water cools.

This year's set of spat do not become infected by the parasite even in areas where infestation by fungus is heavy. *Dermocystidium* losses do not occur until after the first year of the oyster's life and for this reason young spat can be safely moved without danger of losses from this cause.

No further increase in the extent of the light MSX infection of Maryland oysters had been recorded this season.

Oyster Setting: Oysters continued to set at a favorable rate and at most stations a substantial spat fall had been received on test shells.

Reports from various sources indicate that good sets were common on commercially-planted shell although official counts will not be made until setting has ended and spat are large enough to be easily recognized by the naked eye.

POOR CROP OF JAMES RIVER SEED OYSTERS PREDICTED AFTER SETTING FAILURE:

Oyster spat have failed to set this year in the James River seed beds in Virginia. This indicates a failure in the oyster reproduction cycle in the James River because young oysters or spat set (attach themselves to dead shell) soon after hatching. The Virginia Institute of Marine Science examined many oyster seed beds in the James River. Only Wreck Shoal showed a few spat. Bags and strings of test shells on Wreck Shoal showed an average of less than one-half spat per shell for the usually important period from mid-August to mid-September. The setting season ends about the first of October. The usual count for a setting season is from 5 to 15 spat per shell.

In 1961, oyster setting in the James River was light so the failure this year is a crisis for James River public oyster beds. James River seed stock normally has at least three year-classes of oysters—current year spat, yearling, and 2-year-old oysters. But in the coming 1962/63 season only 2-year-olds and a few yearlings will be available as seed. In the following season the shortage will be even more apparent.

The most valuable seed oysters are spats and yearlings with a high count per bushel. The value of this year's seed stock will therefore be reduced and yields per bushel planted will be lower. The full advantage of younger year-classes could have been obtained in the low-salinity areas where most of this year's crop will be planted. In low-salinity areas the drills that prey on young oysters are absent. Only low-salinity areas are in production now because of the MSX disease or blight.

The hooked mussel, a fouling organism which seriously reduces the quality of seed oysters, is dying in some areas of the seed beds, although they may continue to be a problem.

The causes of spat failure in James River cannot be clearly defined. Two factors may be involved. First, oysters in the extensive planting areas of Hampton Roads, Va., which may contribute spawn to the James River seed area, are now decimated by the MSX epidemic. Second, the very wet years, 1960-61, may have contributed to the very poor oysters which were typical of James River in the spring of 1962. This may have had an effect on spawning. There is no reason to suspect that weather conditions in 1962 were unfavorable to reproduction and larval survival since moderate sets were obtained in other areas of Chesapeake Bay where spat falls are often failures. For example, a set occurred in September 1962 on Hampton Bar below the seed area.

The Virginia Institute of Marine Science, Gloucester Point, Va., attempts to record setting success each year in as many areas of Virginia as possible. But there are so many creeks and rivers in Virginia that all cannot be covered by the Institute. The Institute would appreciate reports from oystermen of good sets for 1962 in any small creeks, particularly in the James River and Hampton Roads area. (Virginia Institute of Marine Science, Gloucester Point, Va., September 24, 1962.)



Pollution

NEW LABORATORY TO STUDY SALT-WATER QUALITY STANDARDS:

A new laboratory (costing \$1.7 million) for salt-water pollution research is to be established in Kingston, R. I., announced the U. S. Public Health Service on October 1, 1962. Water quality standards for all marine water uses, including aquatic life, wildlife, industrial, agricultural, recreational, and

other uses, are to be developed by the U. S. Public Health Service at the new laboratory.

The Kingston Laboratory will conduct scientific studies on measures to be taken to protect the public from infectious biological and other toxic pollutants. It will also investigate the effects of pollution on aquatic life, establish criteria for radioactive wastes and other pollutants, and determine the effects of distribution of pollutants by water currents in bays and harbors.

The full laboratory staff will comprise about 100 persons, of whom about 75 will be scientists in the fields of marine and estuarine biology, microbiology, chemistry, physics, radiology, oceanography, and engineering.

Aside from its location on Narragansett Bay, Kingston was chosen as the site for the new laboratory largely because of scientific activities in the Marine Services School of the University of Rhode Island there, the Northeast Shellfish Sanitation Laboratory, and a new University Oceanographic Laboratory to be established in the area later.

NEW LABORATORY TO STUDY FRESH-WATER QUALITY STANDARDS:

A fresh-water quality standards laboratory is to be established at Duluth, Minn., according to an announcement by the U. S. Public Health Service on October 8, 1962. The total cost of the project, including construction and equipment, will be \$2.3 million. Water quality standards for all fresh water uses, including domestic water supply, aquatic life, wildlife, industrial, agricultural, and other uses, are to be developed at the new laboratory, which will be operated by the U. S. Public Health Service.

The new laboratory will conduct scientific studies of measures to be taken to protect the public from infectious biological and other toxic pollutants. It will also investigate the effects of pollution on aquatic life, and establish criteria for radioactive wastes and other pollutants. In carrying out its research program, the laboratory aims to provide reliable methods for detecting and measuring the effects of pollutants on water quality, particularly those resulting from new technologies for which such methods do not now exist.

The new laboratory will employ about 130 persons, some 90 of whom will be scientists, chemists, microbiologists, physicists, biologists, engineers, and other laboratory personnel.

The location of the laboratory at Duluth, Minn., on Lake Superior, is in an area surrounded by clean fresh-water streams which are well suited to the development of the program's basic procedures. The location has the added advantage of being close to the University of Minnesota (Duluth Campus), which has been conducting extensive studies of the biology of streams and lakes. It is also near the Oliver Research Laboratory of the U. S. Steel Corporation, and Wisconsin State College in Superior, Wis.

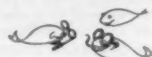
SCIENTIFIC VESSEL CONDUCTS WATER POLLUTION CONTROL RESEARCH IN LAKE MICHIGAN:

The most fully-equipped scientific vessel, the Maurice F. Fitzgerald, used exclusively for water pollution control research is now operating on Lake Michigan, according to an October 9, 1962, announcement by the U. S. Public Health Service. The vessel will operate around-the-clock to determine sources of water pollution, mainly in the lower area of Lake Michigan for a period of four months. It is under contract from an oceanographic firm in Annapolis, Md.

The scientific work the vessel will do is part of a series of comprehensive water pollution control programs that the Public Service's Division of Water Supply and Pollution Control is conducting in the Great Lakes and Illinois Waterways, and in the basins of the Columbia River, Chesapeake Bay-Susquehanna River, Delaware River, and upper Ohio and Columbia Rivers. Comprehensive planning to provide systematic, orderly water-quality management in all of the country's river basins is expected to be completed by 1970 which has been set as the completion date goal for the program. The antipollution study of all the Great Lakes will take about seven years.

The Maurice F. Fitzgerald is 83 feet long, 16 feet wide, and can berth a crew of 6, and also accommodate a scientific team of 6 persons with all necessary instruments. The vessel will be cruising constantly, weather permitting, to locate and fix water pollution

control sampling stations. Many analyses will be made in the vessel's special laboratories, such as biological, bacteriological, and chemical determinations of lake waters, as well as biological analyses of the lake bottom. It will also participate in the project's study of Lake Michigan's water currents.



Refrigerated Sea Water

REFRIGERATED SEA WATER TANK INSTALLED IN OCEAN PERCH FISHING VESSEL:

An experimental refrigerated-sea-water tank designed to hold approximately 3,000 pounds of fish was recently installed aboard a commercial fishing vessel (Judith Lee Rose) engaged in the ocean perch fishery out of Gloucester, Mass. The tank is equipped with a compressor, circulating pump, and a thermocouple wire lining in the fish hold located at the stern section of the vessel. The tank was installed as an experiment under a research program on refrigerated sea water conducted by the U. S. Bureau of Commercial Fisheries Technological Laboratory at Gloucester.

Data on operation of the tank and quality of the fish are to be collected by the Bureau's technologists during several of the vessel's trips, and then evaluated to determine whether fish stored in refrigerated sea water are of better quality than ice-stored fish. If the experiment on the ocean perch vessel proves successful, efforts are to be made for the permanent installation of such tanks in this, and other fishing vessels.



Shrimp

UNITED STATES SHRIMP SUPPLY INDICATORS, SEPTEMBER 1962:



In a fishery plant in Bayou La Batre, Ala., cooked peeled and deveined shrimp are held in pans stacked in a rack.

United States Shrimp Supply Indicators, September 1962					
Item and Period	1962	1961	1960	1959	1958
..... (1,000 Lbs., Heads-Off)					
Total Landings, So. Atl. and Gulf States:					
November	-	9,996	14,454	12,412	12,416
October	-	12,696	21,690	19,601	16,462
September	12,700	9,691	18,832	18,331	15,847
January-August	56,241	52,474	78,962	71,599	63,728
January-December	-	91,395	141,035	130,660	116,552
Quantity canned, Gulf States 1/:					
November	-	2,215	1,614	2,312	3,424
October	-	2,307	2,567	2,531	3,489
September	1,700	785	2,236	2,108	2,825
January-August	13,064	9,653	21,200	16,450	14,723
January-December	-	15,763	28,594	24,679	26,404
Frozen inventories (as of end of each mo.) 2/:					
November 30	-	20,668	37,264	37,334	30,211
October 31	-	17,811	31,209	33,057	24,620
September 30	4/	13,361	24,492	26,119	18,079
August 31	12,754	12,728	20,171	23,760	15,274
July 31	13,677	14,849	17,397	22,352	12,351
June 30	13,904	19,416	15,338	19,283	10,664
January 31	21,326	37,842	34,332	30,858	17,963
Imports 3/:					
November	-	14,852	13,516	10,269	10,617
October	-	16,813	14,211	15,340	11,463
September	4/	8,629	8,190	7,541	7,620
August	7,381	6,743	6,406	5,107	6,628
January-July	72,266	63,803	58,684	57,687	38,618
January-December	-	126,268	113,418	106,555	85,394

1/Pounds of headless shrimp determined by multiplying the number of standard cases by 33.
 2/Raw headless only; excludes breaded, peeled and deveined, etc.
 3/Includes fresh, frozen, canned, dried, and other shrimp products as reported by the Bureau of the Census.
 4/Not available.
 Note: Data for 1962 and 1961 are preliminary. September 1962 data estimated from information published daily by the New Orleans Fishery Market News Service. To convert shrimp to heads-on weight multiply by 1.68.



South Atlantic

Exploratory Fishery Program

ROYAL-RED SHRIMP AND CALICO SCALLOP EXPLORATIONS OFF FLORIDA'S EAST COAST:

M/V "Silver Bay" Cruise 41 (August 22-September 8, 1962): To obtain seasonal and geographical coverage of royal-red shrimp (*Hymenopenaeus robustus*) and the Canaveral or calico scallop (*Pecten gibbus*) were the objectives of this cruise by the exploratory fishing vessel *Silver Bay* of the U. S. Bureau of Commercial Fisheries. The vessel operated on the Continental Shelf along the east coast of Florida from Fort Pierce to Jacksonville during the 18-day cruise, and returned to its base at Brunswick, Ga., on September 8, 1962.

A total of 143 stations were completed which included the use of 70-foot flat trawls, 60- and 40-foot 2 seam trawls, 8-foot tumbler dredge, and a 25-foot scallop trawl. The

problem of badly twisted bridles experienced on previous cruises was reduced by attaching the trawls to the back side instead of the back edge of the boards. That procedure increased the spreading force of the boards and also maintained a greater lateral spread of the bridles.

On the royal-red shrimp grounds, 36 exploratory drags were made with catches ranging up to 400 pounds of 36-40 shrimp (heads-on) during a 3-hour drag. Depths ranged from 100 to 210 fathoms. Exceptionally strong tides of up to 5 knots, and low bottom temperature (47° F.) at times prevailed. These were possibly caused by a passing tropical disturbance which may have been responsible for the light catches.

During the scallop exploration, a total of 95 stations were completed with a 25-foot scallop trawl and an 8-foot tumbler dredge fitted with a 2½ inch nylon liner.

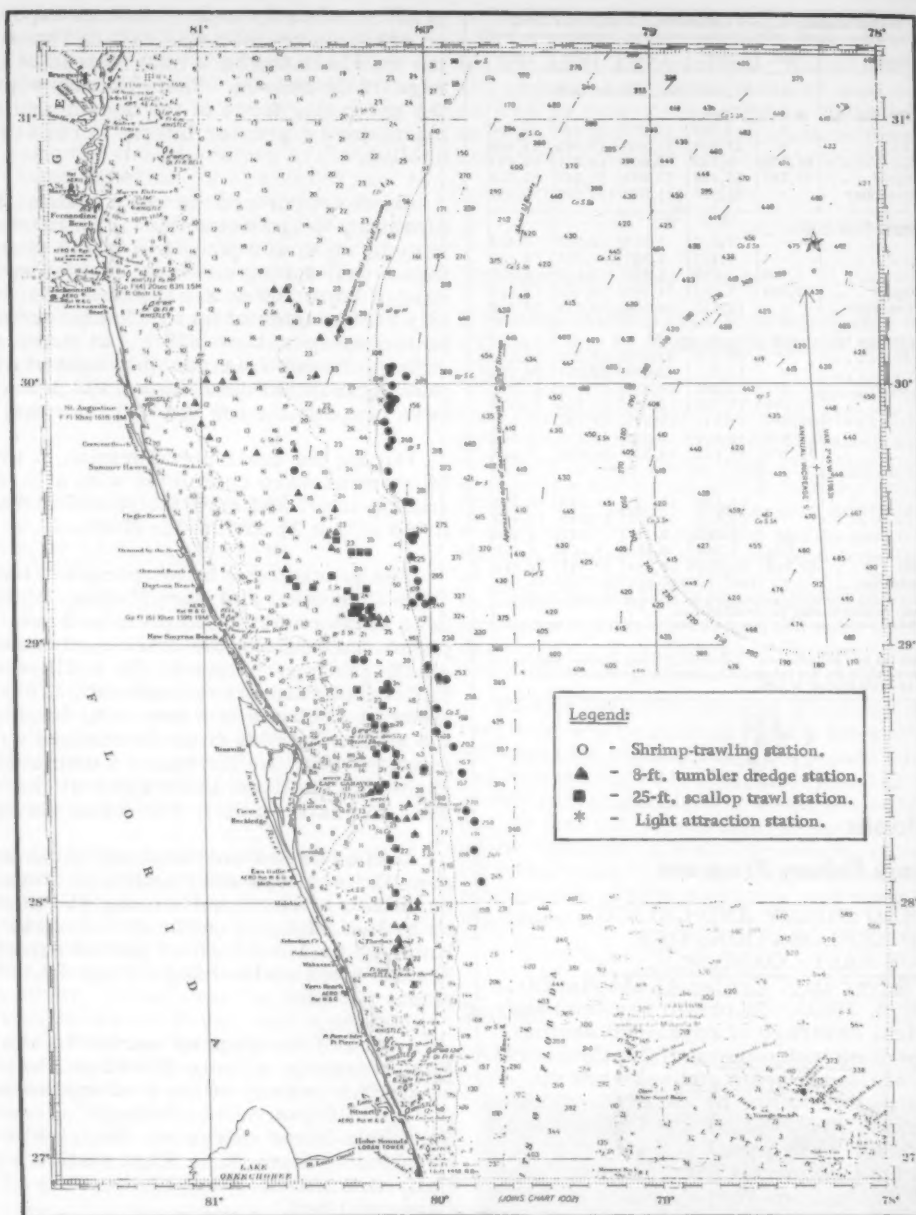
The lowest catch rates occurred between Cape Canaveral and Fort Pierce. Although dead scallop shells compromised over 90 percent of some of the catches, thousands of small scallops in the 20-25 millimeter (0.8-1 inch) size were observed. This was taken as evidence of a new crop coming into the area. Samples from 14 stations were preserved for the Bureau of Commercial Fisheries Shellfish Laboratory at Gulf Breeze, Fla., to assist in their studies of the species.

East of Cape Canaveral and north to Jacksonville, scallops were caught in commercial quantities at various stations. Catches ranged up to 14 bushels of calico scallops (45-50 millimeters or 1.8-2 inches) per 30-minute drag. Scallop meat yields ranged from 91 to 61 meats per pint.

At one of the stations worked by the *Silver Bay*, 8 bushels of large (60-65 millimeters or 2.4-2.6 inches) calico scallops were caught in 17½-19 fathoms, 36 miles, 95° (true), off St. John's River entrance. The yield there was 79 meats per pint. That station substantially extends the northern boundary of the Canaveral bed.

Fresh shell stock from the cruise was preserved and shipped to a Chicago firm who is working on the development of a shucking machine for calico scallops.

Scallop specimens were collected during operations at the trawling and dredging sta-

M/V Silver Bay Cruise 41 (Aug. 22 to Sept. 8, 1962).

tions and preserved by the Bureau of Commercial Fisheries Biological Laboratory at Brunswick for future study.

Note: See Commercial Fisheries Review, October 1962 p. 30.



South Carolina

FISHERIES BIOLOGICAL RESEARCH PROGRESS, JULY-SEPTEMBER 1962:

The following is a report on the progress of biological research by the Bears Bluff Laboratories, Wadmalaw Island, S. C., for July-September 1962:

Oyster Research: Most of the Laboratories' efforts during the third quarter of 1962 were directed toward helping the State's Division of Commercial Fisheries survey oyster bottoms for leases. In addition, some data were collected on the value of solite as a substitute cultch.

Shrimp Research: Regular station plankton tows made during the quarter showed that recruitment of postlarval white shrimp was largely over by late August. The postlarvae had begun entering coastal sounds and rivers in late May and reached peak abundance during the last week in June. The postlarvae were slightly more plentiful this year than in 1961, indicating that the commercial catch of white shrimp may be somewhat of an improvement over last year.

Brown shrimp were much more abundant during July-September this year as compared with 1961. Experimental plankton tows earlier this year had indicated that the postlarvae were over five times as numerous in sounds and rivers during 1962, and this has been reflected in the commercial catch this season, which has been greatly increased over last year's. Experimental trawling during the quarter revealed that brown shrimp were three times more plentiful at regular survey stations, located throughout the coastal waters of the State, than during July-September 1961.

Catch-per-unit-of-effort data from experimental trawl hauls also indicated that croakers increased in abundance in 1962. During the quarter alone, croakers were approximately 50 percent more plentiful than during the same period of last year. Catch data for spot, on the other hand,

showed little difference in the abundance of those fish during the two periods.

White shrimp were slightly less abundant in experimental trawl catches during July-September 1962 as compared with that quarter of 1961, but the differences in abundance is hardly significant and this condition may be reversed during the next quarter.

A detailed study of croakers is being carried on this year and was continued throughout the quarter. The aims of the study are to determine the abundance, growth rates, and distribution of croakers in South Carolina waters. It is hoped that the study may also yield information concerning the relative importance of the State as a nursery area for those fish. Although croakers never reach a large size, the young are found in tremendous quantities in coastal sounds and rivers, and it is thought that perhaps those fish migrate along the coast and enter the commercial catch of other states.

Pond Cultivation: Several pond-cultivation experiments were begun in July 1962, and were still under way at the end of the quarter. Two one-acre ponds are used to compare the advantages or disadvantages of natural flooding as a means of stocking to stocking by hand. Both of the ponds were drained in late June, cleaned out, and allowed to refill with water from the nearby creek. No effort was made to screen out fish, crabs, etc. in the pond which was to be stocked naturally by flooding, and the gates of the pond were allowed to remain open for approximately one month, during which time postlarval white shrimp were most abundant in nearby waters. This pond was then closed and treated with 1.5 parts per million of rotenone to remove predatory fishes.

The other pond in the experiment was screened after draining and allowed to refill, then was closed off. The pond was then stocked with approximately 8,000 juvenile shrimp which were collected by means of cast nets from nearby creeks. The pond was also treated with rotenone to remove fish. Crab pots were used in both ponds involved in the experiment to remove crabs and scrap fish. Chopped crabs have been placed in the ponds several times each week as shrimp forage. These experiments were to be ended sometime in October or November, at which time both ponds are to be drained and harvested.

Two one-quarter-acre ponds were stocked with fingerling mullet in July 1962. This experiment is being conducted to determine the productivity and growth rates of mullet in salt-water ponds. A small one-tenth-acre pond has been stocked with postlarval shrimp from plankton tows in an effort to determine the feasibility of this method of stocking shrimp ponds.

Note: See Commercial Fisheries Review, September 1962 p. 40.



Standards

VOLUNTARY STANDARDS AND INSPECTION PROGRAM FOR FISHERY PRODUCTS:

Two new fishery products standards, one for frozen fried scallops and the other for flounder and sole fillets, were developed by the U. S. Bureau of Commercial Fisheries during the past year. This brings the total of USDI (United States Department of the Interior) quality standards for fishery products now available for use by the fishing industry to 12. Technical assistance was also provided by the Bureau in the development of a Federal specification for frozen raw breaded shrimp and three fishery product specifications for use by State Purchasing Officials. Standards and specifications for fishery products are tools by which the industry and other interested parties can measure product quality. The consumer therefore benefits because such standards and specifications tend to raise the quality level of the product.

A significant change in the Bureau's Inspection and Certification Service regulations became effective June 1, 1962. Under the new regulations, all fees for continuous inspection services are based on a uniform rate per hour. The new regulations also provide for other incidental changes, including a clarification of fees for lot inspection services. The changes will achieve a higher degree of uniformity in the assessment of fees and methods of charging, eliminate variations between processing plants, and provide more flexibility to the Bureau in operating the program.

Over 160 million pounds of various fishery products were produced under continuous inspection and certified by the Bureau during 1961. An additional 25 million pounds

of fishery products were sampled, examined, and certified on a lot basis.

On a national basis, the Bureau of Commercial Fisheries now provides continuous or lot inspection services in 17 different states requiring a work force of 52 trained supervisors and inspectors.



Transportation

SELECTED OCEAN FREIGHT RATES FOR CERTAIN FISHERY PRODUCTS:

Table 1 - Ocean Freight Rates for Selected Fishery Products from Certain African Ports to the United States

Shipping Ports by Countries	Products				
	Canned Spiny Lobsters	Canned Fish Other than Spiny Lobsters	Frozen Spiny Lobster Tails	Frozen Fish in Bulk	Dried Salt Fish
..... (US\$/Freight Ton)					
South-West Africa:					
Walvis Bay	36.00	24.25	76.00	-	-
So. Africa Republic:					
Cape Town					
Port Elizabeth	32.00	24.25	76.00	79.00W	51.25
East London					
Durban					
Mozambique:					
Laurencia Marques	32.00	24.25	76.00	79.00W	51.25
Beira	36.00	27.25	73.00	-	-
Kenya:					
Mombasa	35.50	27.75	73.50	-	-
Tanganyika:					
Tanga					
Dar-Es-Salaam	35.50	27.75	73.50	-	-
Zanzibar					
Malagasy:					
Tamatave					
Diego-Suarez					
Nossi-Be					
Majunga					
Port-Dauphin	37.50	34.00	-	-	-
Mauritius:					
Port Louis	37.50	34.00	-	-	-
Reunion:					
Pointe De Galets	37.50	34.00	-	-	-

Note: Rates are based on freight ton of weight or measurement (2,240 pounds or 40 cubic feet of space), whichever produces the greatest revenue, except that whenever "W" is shown after a rate, the rates apply per net weight.

Table 2 - Ocean Freight Rates for Canned Sardines (Pilchards) and Canned Mackerel from Cape Town or Walvis Bay, South Africa to Selected Far Eastern and South American Ports

Ports of Destination by Countries	Ocean Freight Rate
	US\$/40 Cubic Feet ^{1/}
Philippine Islands:	
Manila	18.33
New Zealand:	
Auckland	
Wellington	35.00
Ecuador:	
Cuayquil	3/50.00

^{1/} The South African Fish Canners' Association quotes all prices c.i.f. Cape Town. If the actual freight rate from Walvis Bay varies from the Cape Town rate, the Walvis Bay canners absorb the difference.

^{2/} For ton of 40 cubic feet.

^{3/} Approximate rate.

(United States Consulate, Cape Town, report of September 21, 1962.)



Tuna

PRODUCTION AND MARKETING PROBLEMS DISCUSSED AT SECOND JAPAN-UNITED STATES CONFERENCE:

The second Japan-United States tuna conference took place October 9-13, 1962, in

Tokyo for the purpose of exchanging views and information on various problems concerning production and marketing of tuna and tuna products which have occurred since 1959 to date.

Conference established two committees in which experts of the two delegations took part.

In Committee 1, the current trend in tuna production and forecast for tuna resources, expanded utilization of tuna fisheries, and measures for improving exchange of information were discussed. With respect to tuna resources, biological and oceanographic information was given and information concerning research programs and administrative measures was freely exchanged. There was an exchange of information on various studies related to expanding uses of tuna.

In Committee 2, the current trends and outlook for tuna market and tuna trade problems were discussed. With respect to tuna market, the current trend was reviewed and consumption, by types of product, by region, and by consumer characteristics was discussed. Information on government programs to develop demand for tuna was exchanged and review of present tuna trade situation was made.

The two committees submitted their reports to the plenary session which approved them on final day of conference.

The two delegations agreed that the conference was a success and very helpful to governments and tuna industries of both countries by providing an opportunity for frank exchange of views and information.

PROPOSED JAPANESE-UNITED STATES TUNA VENTURE IN CALIFORNIA:

Reportedly a California tuna vessel association has proposed a joint Japanese-American tuna venture in San Diego, Calif. But prospects for the venture do not appear to be hopeful, reports the Japanese periodical *Shin Suisan Shimbun Sokuho* of October 4, 1962. This opinion is based on the fact that there have been cases in the past where Japanese participation in this type of venture involving cold-storage plants have ended in failure.

The proposed tuna venture reportedly involves a capital investment of US\$2 million, to be raised equally between the Japanese and United States participants, and is said to include construction of a cold-storage plant in San Diego.

BUREAU OF COMMERCIAL FISHERIES TUNA FORECASTING AND BEHAVIOR PROGRAMS:

Tuna Forecasting Program: A tuna-tagging and blood-sampling project was completed by the chartered tuna seiner West Point when she returned to San Diego on August 23, 1962. The vessel was chartered by the U. S. Bureau of Commercial Fisheries San Diego Biological Laboratory for a 30-day cruise under this program. The latter part of the trip was devoted to joint bluefin tagging operations with the California Department of Fish and Game. A total of 960 bluefin were tagged in the Guadalupe and San Clemente Island area.

In addition to the tagging project, blood samples were taken from 200 bluefin for type analysis in a cooperative program with the Bureau's Biological Laboratory at Honolulu, Hawaii.

In order to determine the feasibility of spotting albacore and bluefin tuna schools from naval aircraft, three flights were made in P2V-type aircraft. The flights were also part of a survey, under this program, to determine the possibilities of charting, from aircraft, specific oceanographic features such as water color. Additional flights were scheduled in September as a continuation of the tuna spotting and oceanographic investigations.

Tuna Behavior Program: Studies on tuna behavior off Socorro Island and Cape San Lucas were completed by the chartered vessel Red Rooster on August 13, 1962. The vessel was chartered by the Bureau's San Diego Biological Laboratory under the Tuna Behavior Program. The Red Rooster worked jointly with both the West Point and the spotting aircraft during the cruise.



U. S. Fishing Vessels

FISHERIES LOAN FUND AND OTHER FINANCIAL AID FOR VESSELS, JULY 1-SEPTEMBER 30, 1962:

From the beginning of the program in 1956 through September 30, 1962, a total of 1,193 loan applications for \$33,490,467 were received by the U. S. Bureau of Commercial Fisheries, the agency administering the Federal Fisheries Loan Fund. Of the total, 630 applications (\$14,872,849) have been approved, 413 (\$10,923,399) have been declined or found ineligible, 129 (\$5,738,022) have been withdrawn by applicants before being processed, and 21 (\$318,260) are pending. Of the applications approved, 253 (\$1,617,937) were approved for amounts less than applied for.

The following fishery loans were approved from July 1, 1962, through September 30, 1962:

North and Middle Atlantic Area: Lester R. Savage, Boothbay Harbor, Me., \$5,000; Wild Duck, Inc., Gloucester, Mass., \$47,400; Kaare Gjertsen, Point Pleasant, N. J., \$40,000; Donald A. McClelland, Point Pleasant, N. J., \$24,000.

South Atlantic and Gulf Area: Arthur I. Tormala, Fort Myers, Fla., \$24,000; Edward Crittenden, Orlando, Fla., \$11,732; John Smircich, Freeport, Tex., \$18,691.

California: Byron T. Anderson, Eureka, \$22,000; David L. Rankin, Trinidad, \$3,500.

Pacific Northwest Area: Boat Trinity & Owners, Seattle, Wash., \$23,000; Charles H. Sheridan, South Bellingham, Wash., \$3,215.

Alaska: Charles O. Tubbs, Juneau \$4,000.

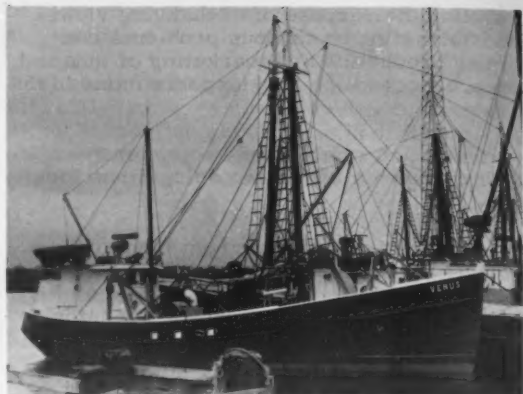
Under the Fishing Vessel Mortgage Insurance Program (also administered by the Bureau) during the third quarter of 1962, commitments to insure mortgages in the amount of \$165,750 on 2 fishing vessels were approved for the Explorer Fishing Corp., New Bedford, Mass. Since the start of this program (June 5, 1960), 12 applications were received for \$1,402,346. Of the total, 11 applications covering 23 vessels have been approved for \$1,485,596. Approval of 3 applications for \$385,000 is pending.

In the Construction Differential Subsidy Program, one application for \$4,000 was received during the third quarter of 1962. No construction differential subsidies were approved during the quarter. The first approval in this program was made in March 1961. The amount approved for subsidy represents one-third the cost of a new vessel. Since the beginning of the program on June 12, 1960, 11 applications were received for \$703,313, of which 5 applications were approved for \$507,646. Approval of 3 applications for \$90,667 under this program is pending. Three applications from ineligible fisheries were disapproved since the start of the program.

Note: See Commercial Fisheries Review, Aug. 1962 p. 40.

FIRST FISHING VESSEL CONSTRUCTION WITH AID OF GOVERNMENT SUBSIDY:

The first fishing vessel in the nation to be completed with Federal subsidy fishing vessel construction funds under Public Law 86-516 was documented for fishing on October 10, 1962, at New Bedford, Mass. The 73-foot wooden otter trawler Venus was issued official number 289369 by the U. S. Bureau of Customs at New Bedford. The U. S. Bureau of Commercial Fisheries further aided in the construction of the vessel by a mortgage insurance guarantee.



Fishing vessel Venus built with aid of Federal Government fishing vessel construction subsidy funds.

The Venus was built in about six months at the Gamage Shipyard in South Bristol, Maine. The owner of the new trawler, Thomas B. Larsen, New Bedford, planned to commence fishing for groundfish in October.

As of October, four other fishing vessels were under construction with the aid of subsidy funds--two 134-foot steel trawlers were being built for Boston owners, one 95-foot wooden trawler for a New Bedford owner, and one 100-foot wooden trawler for a Rockland, Maine, owner. In addition, 2 applications for subsidy aid were being processed at that time.

Fishing vessel construction has been at a low ebb for several years in New England. The Bureau's Fishing Vessel Construction Subsidy Program should help to revive vessel construction. Already several shipyards from Maine to New Jersey have shown an interest in the program.



U. S. Foreign Trade

EDIBLE FISHERY PRODUCTS, JULY 1962:

Imports of fresh, frozen and processed edible fish and shellfish into the United States in July 1962 were up 23.6 percent in quantity and 10.1 percent in value as compared with the previous month. Imports were much greater in July for fish blocks and slabs (increase mostly from Canada, Iceland, and Norway) and frozen tuna (increase mostly from Peru, British West Pacific Islands, Japan, and Ecuador). Imports were also up for groundfish fillets (increase mostly from Canada and Iceland), sea catfish fillets, fresh and frozen salmon (mostly from Canada), canned salmon (increase from Japan), canned tuna in brine other than albacore (mostly from Japan), fresh swordfish (from Canada), canned crab meat (mostly from Japan), canned oysters (mostly from Ja-

pan), and frozen frog legs (mostly from Japan). But imports dropped sharply for canned sardines not in oil (decline mostly from South Africa), and imports were also down for canned sardines in oil, canned albacore tuna in brine (mostly from Japan), flounder fillets (mostly from Canada), frozen swordfish fillets (mostly from Japan), fresh lobsters (from Canada), frozen shrimp, and sea scallops (mostly from Canada).

Compared with the same month in 1961, the imports in July 1962 were up 22.2 percent in quantity and 31.1 percent in value. There was a large increase this July in imports of frozen tuna (increase mostly from Peru, British West Pacific Islands, and Japan) and fish blocks and slabs (increase mostly from Canada, Iceland, and Norway). Other products imported in greater quantity this July were groundfish fillets other than haddock, fresh and frozen salmon, canned tuna in brine other than albacore, fresh swordfish, canned crab meat, canned oysters, frozen spiny lobster tails (increase mostly from Australia and South Africa), frozen shrimp, sea scallops, and frozen frog legs. The increases were partly offset by a sharp drop in imports of canned sardines not in oil (decline mostly from South Africa), as well as a decline in imports of haddock fillets, flounder fillets, sea catfish fillets, frozen swordfish fillets, canned salmon (decline mostly from Japan), canned sardines in oil, and fresh lobsters from Canada.

In the first seven months of 1962, imports were up 15.8 percent in quantity and 24.5 percent in value as compared to the same period in 1961. The greater increase in value was because of the higher prices which prevailed this year for most imported fishery products. Most fishery products were imported in greater quantity this year and imports were up substantially for fish blocks or slabs (increase mostly from Norway), canned salmon (mostly from Canada and Japan), frozen tuna (increase mostly from Japan and Peru), canned tuna (mostly from Japan), canned sardines in oil, frozen shrimp, and sea scallops. Imports were down for the following products: cod fillets, haddock fillets, fresh and frozen salmon (mostly from Canada), canned bonito and yellowtail, canned sardines not in oil, canned oysters (mostly from Japan), and frozen frog legs.

United States exports of processed fish and shellfish in July 1962 were up 40.0 percent in quantity and 25.0 percent in value as compared with July 1961. Exports were up for canned salmon, canned squid (increase mostly to Greece), canned sardines not in oil, and canned mackerel (increase mostly to El Salvador). The table below does not include data on fresh and frozen exports, but exports of frozen shrimp in July 1962 showed a sharp drop due to a decline in the amount exported to Japan. Exports of frozen salmon were down also.

U. S. Imports and Exports of Edible Fishery Products, July 1962 with Comparisons								
Item	Quantity				Value			
	July		Jan.-July		July		Jan.-July	
	1962	1961	1962	1961	1962	1961	1962	1961
Imports:	.. (Millions of Lbs.) (Millions of \$) ..			
Fish & Shellfish:								
Fresh, frozen & processed ^{1/}	104.0	85.1	663.9	573.5	35.0	26.7	226.3	181.8
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen)	2.1	1.5	19.5	14.4	1.0	0.8	7.9	7.4

^{1/}Includes pastes, sauces, clam chowder and juice, and other specialties.

Compared with the previous month, the exports in July 1962 were down 34.4 percent in quantity, but the value of the exports in July 1962 was equal to the value in the previous month. There was a sharp drop in exports of lower-priced products such as canned squid (principally to Greece and the Philippines) and canned sardines not in oil. But exports were up for canned shrimp (principally to Canada and the United Kingdom), and canned mackerel. Although not covered in the table below, exports were up for frozen salmon (principally to France and Canada), but down for frozen shrimp (decline mostly in exports to Japan).

Processed fish and shellfish exports for the first seven months of 1962 were up 35.4 percent in quantity, but the value was up only 6.8 percent as compared with the same period of 1961. Exports of canned squid (principally to Greece and the Philippines) showed the greatest increase in 1962. Exports were also up for canned mackerel, canned salmon, and canned sardines not in oil. But exports were down for canned shrimp (decline mostly in exports to Canada). Although not covered in the table, exports were up for frozen salmon, and were down for frozen shrimp (decline mostly in exports to Japan) and shucked oysters (principally to Canada).

Source: United States Foreign Trade (Trade by Commodity), Summary Report FT 930-E, July 1962, U. S. Department of Commerce.

EDIBLE FISHERY PRODUCTS, AUGUST 1962:

Imports of fresh, frozen, and processed edible fish and shellfish into the United States in August 1962 were down 1.3 percent in quantity and 7.1 percent in value as compared with the previous month. There were sizable declines in August imports of blocks and slabs (declines mainly from Iceland and Norway), groundfish fillets other than haddock (decline mostly from Canada), flounder fillets (mostly from Canada), canned salmon (mostly from Canada and Japan), canned tuna in brine (decline mostly from Japan and Ecuador), northern lobsters from Canada, frozen spiny lobsters, frozen shrimp, and sea scallops (mostly from Canada). The declines were almost offset by a sharp increase in imports of frozen tuna (increase mainly from Japan and Ecuador), fresh and frozen salmon (mostly from Canada), and canned sardines not in oil (increase mostly from South Africa Republic), as well as more modest increases in imports of halibut and salmon fillets (mostly from Canada), swordfish fillets (mostly from Japan), yellow pike fillets (mostly from Canada), fresh swordfish (mostly from Canada), and canned crab meat (mostly from Japan).

Compared with the same month in 1961, the imports in August 1962 were up 16.6 percent in quantity and 13.2 percent in value. There was a large increase this August in imports of frozen tuna (increase mostly from Peru, Ecuador, and Japan). Imports also increased this August for fish blocks and slabs (increase mostly from Norway, Greenland, and Iceland), cod fillets, halibut and salmon fillets, sea catfish fillets, fresh and frozen salmon, canned sardines not in oil (increase mostly from South Africa Republic), canned oysters (mostly from Japan), northern lobsters, frozen spiny lobsters, frozen shrimp, and frozen frog legs (mostly from Japan). But imports were down for groundfish fillets other than cod fillets, flounder fillets, canned salmon, canned tuna in brine, canned sardines in oil, fresh swordfish, canned crab meat, and sea scallops.

In the first eight months of 1962, imports were up 15.9 percent in quantity and 22.8 percent in value as compared with the same period in 1961. The greater increase in value was because of the higher prices which prevailed this year for most imported fishery products. Most fishery products were imported in greater quantity this year and imports were up substantially for fish blocks or slabs (increase mostly from Nor-

U. S. Imports and Exports of Edible Fishery Products, August 1962 with Comparisons								
Item	Quantity				Value			
	Aug.		Jan.-Aug.		Aug.		Jan.-Aug.	
	1962	1961	1962	1961	1962	1961	1962	1961
Imports:	. (Millions of Lbs.) .				. (Millions of \$) .			
Fish & Shellfish:								
Fresh, frozen & processed ^{1/}	102.7	88.1	766.6	661.6	32.5	28.7	258.8	210.5
Exports:								
Fish & Shellfish:								
Processed only ^{1/} (excluding fresh & frozen)	1.7	1.7	21.2	16.1	0.9	0.9	8.8	8.3

^{1/}Includes pastes, sauces, clam chowder and juice, and other specialties.

way), canned salmon (mostly from Canada and Japan), frozen tuna (increase mostly from Japan and Peru), canned tuna other than albacore (mostly from Japan), canned sardines in oil, frozen shrimp, frozen spiny lobsters, and sea scallops. Imports were down for the following products: cod fillets, haddock fillets, fresh and frozen salmon (mostly from Canada), canned bonito and yellowtail, canned albacore tuna in brine, canned sardines not in oil, canned oysters (mostly from Japan), and fresh swordfish (mostly from Canada).

The quantity and the value of United States exports of processed fish and shellfish in August 1962 were the same as in August 1961. Exports were up in August 1962 for canned salmon, canned sardines not in oil, and canned squid. But the increase was offset by a decline in exports of canned mackerel and canned shrimp (mostly to Canada and the United Kingdom).

Compared with the previous month, the exports in August 1962 were down 19.0 percent in quantity and 10.0 percent in value. Exports were down for canned mackerel, canned salmon, canned shrimp, and canned squid (decline mostly in shipments to Greece and the Philippines). The decline was partly offset by increased exports of canned sardines not in oil.

Processed fish and shellfish exports for the first eight months of 1962 were up 31.7 percent in quantity, but the value was up only 6.0 percent as compared with the same period of 1961. Exports of canned squid (principally to Greece and the Philippines) showed the greatest increase in 1962. Exports were also up for canned mackerel, canned salmon, and canned sardines not in oil. But exports were down for canned shrimp (decline mostly in exports to Canada and the United Kingdom). Although not covered in the table, exports were up for frozen salmon, and were down for frozen shrimp (decline mostly in exports to Japan) and shucked oysters (principally to Canada).

Source: United States Foreign Trade (Trade by Commodity), Summary Report FT 930-E, August 1962, U. S. Department of Commerce.

* * * * *

AIRBORNE IMPORTS OF FISHERY PRODUCTS:

January-May 1962: Shrimp was the leading U. S. airborne fishery import during the first part of 1962. Shrimp accounted for 74.1 percent of the quantity and 79.8 percent of the value of airborne imports of fishery products in May 1962. All of the U. S. airborne shrimp imports during the first five months of 1962 originated in Central and South American countries. The leading suppliers of airborne shrimp imports during January-May 1962 were Venezuela with 38.0 percent of the total, Nicaragua with 27.6 percent of the total, and Panama with 17.7 percent of the total.

Other than shrimp, fish fillets from Mexico and live northern lobsters from Canada were the most important airborne imports in May 1962. The airborne imports in May 1962 also included fresh salmon from Canada, spiny lobster tails from Guatemala, fresh and frozen spiny lobsters other than tails from Guatemala and Jamaica, turtles from Colombia, and sturgeon roe from Rumania. The data as issued do not show the state of all products--fresh, frozen, or canned--but it is believed that the bulk of these airborne imports is fresh and frozen products.

U. S. Airborne Imports of Fishery Products, January-May 1962				
Product and Origin ^{1/}	May		Jan.-May	
	Qty. 2/ Pounds	Value 3/ US\$	Qty. 2/ Pounds	Value 3/ US\$
Fish:				
Canada	7, 144	4, 660	8, 144	5, 028
Mexico	121, 963	27, 297	275, 025	53, 373
France	-	-	155	463
Rumania	1, 151	10, 290	1, 251	11, 287
Panama	-	-	7, 807	1, 312
Total Fish . . .	130, 258	42, 247	292, 382	71, 463
Shrimp:				
Guatemala . . .	32, 081	18, 227	98, 149	52, 312
El Salvador . . .	82, 362	61, 655	208, 106	146, 376
Nicaragua . . .	111, 808	39, 887	715, 351	241, 498
Costa Rica . . .	41, 332	18, 190	93, 743	39, 435
Panama	73, 785	35, 853	457, 853	230, 393
Venezuela . . .	120, 165	54, 515	986, 012	470, 410
Ecuador	-	-	12, 210	3, 440
Mexico	12, 743	4, 069	18, 815	7, 919
Netherlands Antilles	-	-	3, 075	2, 722
Total Shrimp . .	474, 276	232, 396	2,593, 314	1,194, 505
Shellfish Other Than Shrimp:				
British Honduras	3, 880	1, 160	65, 764	39, 710
Honduras	-	-	60, 203	47, 706
Costa Rica . . .	-	-	1, 400	1, 247
Panama	-	-	1, 040	1, 011
Jamaica	1, 826	780	30, 014	21, 324
Netherlands Antilles	-	-	14, 159	9, 264
Venezuela . . .	-	-	22, 263	13, 624
Mexico	-	-	27, 793	16, 050
Guatemala . . .	5, 000	2, 000	7, 370	3, 880
Leeward and Windward Islands . .	2, 451	1, 016	17, 274	6, 217
Nicaragua	-	-	390	281
Japan	-	-	26	330
France	174	518	324	937
Colombia	1, 187	2, 990	1, 327	3, 226
Ecuador	-	-	940	704
Canada	20, 723	7, 820	20, 723	7, 820
Total Shellfish (exc. shrimp) . . .	35, 241	16, 284	271, 010	173, 334
Grand Total . . .	639, 775	290, 927	3, 156, 706	1, 439, 299
1/When the country of origin is not known, the country of shipment is shown.				
2/Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.				
3/F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.				
Note: These data are included in the over-all import figures for total imports; i.e., these imports are not to be added to other import data published.				
Source: United States Airborne General Imports of Merchandise, FT 380, May 1962, U. S. Department of Commerce.				

* * * * *

January-June 1962: Airborne fishery imports into the United States and Puerto Rico in June 1962 increased 35.9 percent in quantity and 42.4 percent in value over the previous month. The increase was due mainly to larger shipments of shrimp and live northern lobsters. In June, airborne shrimp imports of 615,485 pounds entered through the U. S. Customs Districts of Florida, New Orleans (La.), Laredo (Tex.), and Los Angeles (Calif.). Airborne imports of live northern

lobsters from Canada amounted to 147,758 pounds and entered through the U. S. Customs Districts of Massachusetts and New York City. Other airborne imports to the United States mainland in June included fish fillets from Mexico, fresh salmon from Canada, spiny lobster tails from British Honduras and El Salvador, and fresh crab meat from Mexico. Puerto Rico's airborne fishery imports in June consisted of 5,509 pounds of live spiny lobsters from Caribbean countries.

Shrimp accounted for 79.7 percent of the quantity and 81.8 percent of the value of air-

borne imports of fishery products in the first half of 1962. All of the U. S. airborne shrimp imports during the first six months of 1962 originated in Central and South American countries. The leading suppliers of airborne shrimp imports in January-June 1962 were Venezuela with 36.3 percent of the total, Nicaragua with 24.7 percent, and Panama with 21.1 percent.

The data as issued do not show the state of all products—fresh, frozen, or canned—but it is believed that the bulk of these airborne imports is fresh and frozen products.



Virginia

STUDY EFFECTS OF MAN-MADE WASTES ON MARINE ANIMALS:

The effects of man-made contaminants on marine animals will be studied by the Virginia Institute of Marine Science, Gloucester Point, Va., under a \$33,300 research grant awarded recently by the Division of Water Supply and Pollution Control of the U. S. Public Health Service. The Institute Director stated that the two-year investigation will be under the direction of the head of the Ecology-Pollution Research Department.

The project will determine the effects of continuous exposure of marine animals to low concentrations of poisonous materials, such as insecticides, herbicides, and domestic and industrial wastes. These are materials known to be discharged into the marine system at present, and will be increased as our population and economy grows in future years, thus posing a threat to marine life.

Safe levels of contaminants may change as the salinity and temperature of the waters change. Animals that are not directly killed by toxic substances may be weakened, exposing them to the onslaughts of predators and diseases, or hindering their reproduction. It is also possible that one link in the food chain may be destroyed resulting in the starvation of all animals dependent upon that link for food.

"We cannot expect to have positively pure waters in areas heavily populated by man," reported the Director. "We can, however, intelligently use our natural resources, and this requires research and planning. The

U. S. Airborne Imports of Fishery Products,
January-June 1962

Product and Origin ^{1/}	June		Jan.-June	
	Qty. ^{2/}	Value ^{3/}	Qty. ^{2/}	Value ^{3/}
	Pounds	US\$	Pounds	US\$
Fish:				
Canada.....	13,173	11,920	21,317	16,948
Mexico.....	75,225	10,765	350,250	64,138
France.....	-	-	155	463
Rumania.....	-	-	1,251	11,287
Panama.....	-	-	7,807	1,312
Norway.....	223	449	223	449
Total Fish.....	88,621	23,134	381,003	94,597
Shrimp:				
Guatemala.....	25,154	11,250	123,303	63,562
El Salvador.....	54,300	31,032	262,406	177,408
Nicaragua.....	76,127	26,754	791,478	268,252
Costa Rica.....	54,944	25,455	148,687	64,890
Panama.....	220,803	114,085	678,656	344,478
Venezuela.....	178,224	111,940	1,164,236	582,350
Ecuador.....	-	-	12,210	3,440
Mexico.....	5,933	1,133	24,748	9,052
Neth. Ant.....	-	-	3,075	2,722
Total Shrimp....	615,485	321,649	3,208,799	1,516,154
Shellfish Other Than Shrimp:				
British Honduras..	9,576	3,154	75,340	42,864
Honduras.....	-	-	60,203	47,706
Costa Rica.....	-	-	1,400	1,247
Panama.....	-	-	1,040	1,011
Jamaica.....	-	-	30,014	21,324
Neth. Ant.....	1,099	486	15,258	9,750
Venezuela.....	-	-	22,263	13,624
Mexico.....	1,806	985	29,599	17,035
Guatemala.....	-	-	7,370	3,880
Leeward and Windward Islands....	2,072	861	19,346	7,078
Nicaragua.....	-	-	390	281
Japan.....	-	-	26	330
France.....	-	-	324	937
Colombia.....	95	400	1,422	3,626
Ecuador.....	-	-	940	704
Canada.....	147,758	62,320	168,481	70,140
El Salvador.....	495	242	495	242
Trinidad.....	2,338	971	2,338	971
Total Shellfish (exc. shrimp).....	165,239	69,419	436,249	242,750
Grand Total....	869,345	414,202	4,026,051	1,853,501

^{1/}Imports into Puerto Rico from foreign countries are considered to be United States imports and are included. But United States trade with Puerto Rico and with United States possessions and trade between United States possessions are not included.

^{2/}When the country of origin is not known, the country of shipment is shown.

^{3/}Gross weight of shipments, including the weight of containers, wrappings, crates, and moisture content.

^{4/}F.o.b. point of shipment. Does not include U. S. import duties, air freight, or insurance.

Note: These data are included in the over-all import figures for total imports; i.e., these imports are not to be added to other import data published.

Source: United States Airborne General Imports of Merchandise, FT 380, June 1962, U. S. Department of Commerce.

results of this project will aid those responsible for planning in making decisions on the amounts of contaminating materials that can be discharged into our waters without harming marine life. Our problem today is to determine these damaging effects before contamination levels become great enough to cause harm!"

State and Federal agencies are rapidly accumulating data for predicting industrial and population levels in the years 1975 and 2000. This information will assist in actions to protect our nation's water resources.



Wholesale Prices

EDIBLE FISH AND SHELLFISH, SEPTEMBER 1962:

From August to September 1962 there was a slight drop in the wholesale price index for edible fishery products (fresh, frozen, and canned). The September index at 119.8 percent of the 1957-59 average was down 1.5 percent from the previous month, but rose 8.6 percent from September 1961. This September's declines in the subgroup indexes for drawn, dressed, or whole finfish, and canned fishery products were offset by increases in the other subgroups.

There were significant decreases from August to September in several fresh drawn and dressed fish products which caused a 5-percent decrease in that subgroup. These included fresh large haddock (ex-vessel price at Boston down 28.9 percent) and fresh or frozen halibut (wholesale price at New York down 8.9 percent). The September average wholesale price at New York City for fresh or frozen dressed king salmon was almost unchanged from the previous month, but was 25 percent higher than a year earlier. The fractional drop in the index for dressed king salmon resulted from slightly lower prices for the frozen product as the season for fresh salmon came to an end. Prices were higher at Chicago for fresh Lake Superior whitefish (up 25.6 percent), and at New York City for Great Lakes yellow pike (up 12 percent). Compared with the same month in 1961, the subgroup index this September was 18.7 percent higher. Prices were higher for all products in the subgroup, except yellow pike at New York City (down 6.7 percent).



Fig. 1 - Barrels and boxes of fish at wholesalers' stands in the "new shed" of the salt-water section of Fulton Fish Market, New York City.

The index for the processed fresh fish and shellfish subgroup this September rose 4.7 percent from August and was up 10.5 percent from September 1961. As in August, fresh shrimp prices at New York City (up 9.7 percent) were responsible for the increase. The demand for shrimp continued good and market conditions were strong in September. Although there were some indications of a price drop for shrimp towards the end of the month, the drop in imports from Mexico because of the tie-up of that country's west coast fleet reversed the trend and prices firmed up again. Prices for fresh haddock fillets at Boston were lower (down 4 percent) than in August despite some decline in the September landings of small haddock. The new season for fresh shucked oysters started in September. Prices at Norfolk of \$7.50 a gallon were the same as in September 1961, and remained unchanged since April 1962. When compared with September 1961, the subgroup index this September was up 10.5 percent because of higher prices for fresh haddock fillets (up 14.5 percent) and fresh shrimp at New York City (up 20.2 percent).



Fig. 2 - Deveining shrimp in a fishery plant located in Tampa, Fla.

The processed frozen fish and shellfish subgroup index this September increased 4.2 percent from the previous month and jumped 19.5 percent from September 1961. From August to September, prices were higher for frozen shrimp at Chicago (up 6.5 percent) and for ocean perch fillets at Boston (increased 4.9 percent). The frozen shrimp market continued strong during September at even higher prices than in August. Erratic frozen shrimp prices at Chicago for a brief period in September did not change the firm over-all market tone that prevailed throughout the month. As compared with September 1961, prices for all fillets in the subgroup averaged 4 percent higher. Frozen shrimp prices at Chicago were up 29.9 percent from September a year earlier.

In the canned fish subgroup, a weakening trend was indicated for all major products because of heavier seasonal packs. From August through September the subgroup index dropped 6.1 percent and declined 4 percent from September 1961. Prices this September were lower for canned pink salmon (down 10.6 percent), canned tuna (down 3.3 percent), and canned Maine sardines (down 2.1 percent). The canned tuna pack at the end of September was considerably ahead of the same period a year ago, and well ahead of the record 1959 pack for the same period. But canned tuna prices this September were still 2.3 percent higher than a year earlier; in August they were higher than the previous year by 10.4 percent. The new pack of canned Maine sardines at 1.8 million standard cases as of September 22, was nearly 4 times greater than in the same period of 1961. Prices for canned Maine sardines this September were 11.6 percent lower than at the same time last year. Through September very few California sardines had been packed because there were practically no significant landings.

Table 1 - Wholesale Average Prices and Indexes for Edible Fish and Shellfish, September 1962 With Comparisons

Group, Subgroup, and Item Specification	Point of Pricing	Unit	Avg. Prices 1/ (\$)		Indexes 2/ (1957-59=100)			
			Sept. 1962	Aug. 1962	Sept. 1962	Aug. 1962	July 1962	Sept. 3/1961
ALL FISH & SHELLFISH (Fresh, Frozen, & Canned)					119.8	121.6	119.0	110.3
<u>Fresh & Frozen Fishery Products:</u>					125.6	124.3	118.5	107.9
<u>Drawn, Dressed, or Whole Finfish:</u>					125.0	131.6	123.3	105.3
Haddock, lge., offshore, drawn, fresh	Boston	lb.	.10	.14	78.1	109.8	98.6	73.4
Halibut, West., 20/80 lbs., drsd., fresh or froz. .	New York	lb.	.43	.47	126.6	138.9	133.0	115.4
Salmon, king, lge. & med., drsd., fresh or froz. .	New York	lb.	1.05	1.05	146.3	146.7	136.2	117.0
Whitefish, L., Superior, drawn, fresh	Chicago	lb.	.66	.53	98.5	78.4	89.5	78.4
Yellow pike, L., Michigan & Huron, rnd., fresh . .	New York	lb.	.56	.50	91.7	81.9	77.8	98.3
<u>Processed, Fresh (Fish & Shellfish):</u>					123.1	117.6	113.4	111.4
Fillets, haddock, sml., skins on, 20-lb. tins. .	Boston	lb.	.36	.37	86.2	89.8	94.7	75.3
Shrimp, lge. (26-30 count), headless, fresh . .	New York	lb.	1.07	.98	125.4	114.3	105.5	104.3
Oysters, shucked, standards	Norfolk	gal.	7.50	7.50	126.5	126.5	126.5	126.5
<u>Processed, Frozen (Fish & Shellfish):</u>					122.8	117.8	113.3	102.8
Fillets: Flounder, skinless, 1-lb. pkg.	Boston	lb.	.40	.40	100.1	100.1	98.9	97.6
Haddock, sml., skins on, 1-lb. pkg.	Boston	lb.	.35	.35	101.1	101.1	98.2	96.7
Ocean perch, lge., skins on 1-lb. pkg.	Boston	lb.	.32	.30	110.4	105.2	103.4	105.1
Shrimp, lge. (26-30 count), brown, 5-lb. pkg. .	Chicago	lb.	1.15	1.08	136.4	128.1	122.2	105.0
<u>Canned Fishery Products:</u>					110.2	117.4	120.1	114.8
Salmon, pink, No. 1 tall (16 oz.), 48 cans/cs. .	Seattle	cs.	25.50	28.50	111.1	124.2	124.2	122.0
Tuna, lt. meat, chunk, No. 1/2 tuna (6-1/2 oz.), 48 cans/cs.	Los Angeles	cs.	11.75	12.15	104.4	107.9	107.9	102.1
Sardines, Calif., tom. pack, No. 1 oval (15 oz.), 24 cans/cs.	Los Angeles	cs.	5.25	5.25	118.5	118.5	118.5	107.2
Sardines, Maine, keyless oil, 1/4 drawn (3-3/4 oz.), 100 cans/cs.	New York	cs.	9.11	9.31	116.9	119.4	145.1	132.2

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.

3/Recomputed to be comparable to 1957-59=100 base indexes.

1/Represent average prices for one day (Monday or Tuesday) during the week in which the 15th of the month occurs. These prices are published as indicators of movement and not necessarily absolute level. Daily Market News Service "Fishery Products Reports" should be referred to for actual prices.

2/Beginning with January 1962 indexes, the reference base of 1947-49=100 was superseded by the new reference base of 1957-59=100.

3/Recomputed to be comparable to 1957-59=100 base indexes.



ARCTIC RESEARCH REVEALS LITTLE MARINE LIFE

The Fisheries Research Board of Canada in the spring of 1961 sponsored research of the frozen wastes of Canada's far north where the seas lie forever bound by polar ice. A scientist from the Board's Pacific Oceanographic Group at Nanaimo, B. C., was the only fisheries representative on a scientific team which carried out specialized studies on the Prince Gustaf Adolph Sea, in an area roughly 600 miles from the North Pole. The precise interest of the fisheries scientist were to determine the physical and chemical properties of sub-ice seas and to gain information on the living creatures found in them.

Forms of marine life are limited on the polar region. No fish was taken although many different methods were used in an effort to do so. Plankton hauls to depths of 400 feet were not too productive. However, they yielded quantities of shrimp-like organisms in similar magnitude to winter sampling in certain areas of the North Pacific Ocean where water temperature conditions are vastly different.

Many important contributions to the fields of oceanography and biology of arctic seas were made through the party's observations on the Prince Gustaf Adolph Sea. These observations required sustained effort under the most trying and hazardous of conditions. (Trade News, September 1962, of Canada's Department of Fisheries.)



International

TUNA

U. S. INTERIOR DEPARTMENT OFFICIALS PARTICIPATE IN UNITED STATES-JAPAN CONFERENCE IN TOKYO:

Frank P. Briggs, Assistant Secretary of the Interior for Fish and Wildlife, and Philip H. Trezise, Deputy Assistant Secretary of State for Economic Affairs, were cochairmen of the United States delegation to the United States-Japan Tuna Conference in Tokyo, Japan, October 9-13, 1962.

The conference was to be an official inter-governmental meeting of experts on essentially technical matters to exchange information and views on certain aspects of the conservation, production, processing, and marketing of tuna by the United States and Japan. Greater understanding and mutual benefits are expected from this bilateral exchange and discussion of current information on such matters as tuna fisheries, trends in tuna production, conservation and utilization of tuna resources, market trends, and expanded international trade of tuna.

The Tokyo meeting was first suggested last May 16 by Ichiro Kono, Japan's Minister of Agriculture, Fisheries, and Forestry, when he visited the United States and met Secretary of the Interior Stewart L. Udall. A similar conference was held in Tokyo in September 1959. Tuna fishery operations since have expanded even more around the globe, and because Japan and the United States are the two most prominent tuna-producing nations in the world, Minister Kono proposed that another conference on tuna would be most appropriate and helpful. Secretary Udall had indicated to Minister Kono that the Department of the Interior would generally be interested in such a meeting. Plans for the conference were developed by both countries.

Members of the United States delegation attending the Tokyo conference included 9 other Government representatives and 11 industry advisers.

GENERAL AGREEMENT ON TARIFFS AND TRADE

EFFECTS OF NONTARIFF MEASURES ON FISHERY TRADE STUDIED:

A study to determine the use and effects of nontariff measures in support or protection of agriculture or fishery production and trade was conducted by Committee II of the General Agreement on Tariffs and Trade (GATT). The reports resulting from the study contain the Committee's general findings and conclusions on the use and effects of support and protection measures on international trade.

The Committee consulted with 39 GATT member countries about their policies. Of the 39 member countries, 34 of them had important fisheries. With the experience and information gained from those consultations, the Committee has published its second and third reports. Pertinent portions of the report concerning fisheries follow:

Nontariff Measures: Of the 34 countries examined by the Committee, all but 6 had some form of nontariff devices affecting trade in fish and fishery products. There are wide differences from country to country in the use of nontariff measures, and some of the measures examined are either not in use or of no practical importance, as for instance mixing regulations and State-trading.

Consumer's subsidies and arrangements for the disposal of surpluses are in use in some countries. The predominant and important devices applied are various forms of income and price support including government subsidies, import levies and quantitative restrictions on imports. Of the 34 countries examined, 17 of them practice income

International (Contd.):

and price support systems of various kinds, and of those countries, 12 give direct governmental financial support to the fishing industry.

In most of those countries subsidies, either as grants or as loans at preferential interest rates, are given in connection with the building of new fishing vessels and in order to improve generally the fishing gear and equipment. Governmental guaranteed minimum price systems in many cases also involve subsidies. A few countries give subsidies directly to the fishermen to improve their incomes.

Grants and loans given to the fishing industry for improving the equipment and the guaranteed minimum price systems are arrangements which are usually in operation over a long period of time, as a part of the fishing policy pursued by the country. Direct subsidy schemes are often of a more limited character based on special circumstances such as sudden and heavy decreases in catches of certain products or sudden drops in market prices.

Quantitative restrictions are applied by 25 of the 34 countries. In some countries, quantitative restrictions are directed against imports from certain countries or areas. Other countries impose restrictions on all or most imports of fish and fishery products. Only 13 of the 25 countries stated that quantitative restrictions are imposed for balance-of-payment reasons. Quantitative restrictions appear to be an integral part of the protective systems in force in many countries and have no longer any connection with the balance-of-payment position. Seventeen of the countries examined have GATT tariff bindings on all or some categories of fish imports; many of those countries maintain some form of nontariff devices by which the benefit of the bindings is reduced or in some cases largely nullified. In addition, many of those countries aim at self-sufficiency or a high degree of self-sufficiency.

Effects of Nontariff Measures: There is a general feeling that the widespread nontariff measures applied by the various countries, especially such measures as public financial assistance, and quantitative restrictions affect production, consumption, and prices in international trade in fish and

fishery products. The lack of expansion of trade must to a large extent be attributed to those measures, which in most cases seem to be especially designed as part of the fishery policies pursued by countries.

In countries where quantitative restrictions are in use, the measures constitute a barrier to the development of the trade for fishery products against which they are directed, in this way protecting the producers from import competition and insulating them from fluctuations in world market prices.

Income and price support, including governmental subsidies, grants and loans at preferential rates, may in the long run have adverse effects on the fishing industry if the financial support leads to overfishing in certain waters.

Nontariff measures will, in one way or another, tend to restrain structural changes and natural development in production and to impede the free development of competition in international trade.

The increase in production is not reflected in a corresponding increase in human consumption. Removal of the existing barriers to trade would lead to an increase in the consumption of edible fish products, especially in the field of frozen products. The great inland areas in the world, where fish supplies until now have been scarce or nonexistent should be potential markets for large quantities of fish, especially frozen fish, when "cold chains" are sufficiently established.

The national fishery policies pursued create great problems for the traditional exporting countries and, in particular, for those countries whose national economies depend heavily upon fisheries. Furthermore, the measures applied cannot be said to have solved adequately the economic problems confronting the fisheries of other countries.

Many of the countries examined have GATT tariff bindings on fish imports. Many of those countries maintain some form of nontariff device which reduces the benefits of the bindings and, in some cases, largely nullifies them. Certain of those countries are important fish consumers. The Committee noted that the impairment of bindings was obviously of great significance to the fish exporting countries. The Committee took note that a positive assurance of access to the markets

International (Contd.):

of the countries with whom tariff concessions were negotiated is regarded as essential by some exporting countries if they are to be able to participate effectively in tariff negotiations."

Notes: (1) A copy of the 50-page report (GATT Program for Expansion of International Trade, Trade in Agriculture Products, Second and Third Reports of Committee II) may be obtained from the Sales Agent for GATT Publications, International Documents Service, Columbia University Press, 2960 Broadway, New York 27, New York. The price is \$1.00.

(2) See Commercial Fisheries Review, June 1962 p. 1.

EUROPEAN FREE TRADE ASSOCIATION

NORWAY CUTS TARIFFS ON IMPORTS FROM OTHER EFTA COUNTRIES:

Norway's tariffs on imports from six other European Free Trade Association (EFTA) countries were cut from 70 percent to 60 percent effective September 1, 1962. Norway has also agreed to make a further 10 percent reduction not later than April 30, 1963. Five of the Outer Seven countries reduced their import tariffs from 70 percent to 60 percent in March 1962. Another 10-percent cut was to be made by those 5 countries on October 31, 1962.



The second 10-percent cut in October 1962 by the other EFTA countries was effected much earlier than originally planned, and will mean a total 50 percent tariff slash since the EFTA agreement was signed. The Norwegian tariff cuts had been postponed with approval of the EFTA Ministerial Council. (News of Norway, August 30, 1962, of the Norwegian Information Service.)

Note: See Commercial Fisheries Review, August 1962 p. 51.

FOOD AND AGRICULTURE ORGANIZATION

FISHING METHODS AND GEAR SEMINAR AND STUDY TOUR IN U.S.S.R.:

Representatives from Asian and African countries participated in a seminar and study tour on fishing methods and fishing gear technology, held in the Union of Soviet Socialist Republics August 18 through September 28, 1962. The seminar-study tour was sponsored by the Food and Agriculture Organization

(FAO) at the invitation of, and in cooperation with the U. S. S. R. Government.

The Prospectus for the Seminar-Study Tour as outlined by FAO follows:

Background and Objectives: The participants in the seminar and study tour will be fisheries officers charged with developing fishing industries in their home countries which are now at various levels of development. All are familiar with the general techniques of fishing. Most of the countries are tropical or subtropical and the emphasis will be on warm-water fishing, mainly with small and medium size mechanized craft ranging from 25-100 feet, but with some briefing on fishing with bigger vessels.



During the seminar, the entire field of fishing methods and gear technology will be covered as far as time permits, but with major emphasis on basic subjects such as materials, rational design and construction of fishing gear, fishing theory including tactics of fish finding and attraction of fish, as well as a general briefing on various methods of fishing and discussion of their relative suitability under various conditions. Several of those subjects will be covered more thoroughly in the course of the study tour where fishing operations can be observed and analyzed critically.

Major emphasis will be on the methods of main importance in the home countries of the participants, such as long-lining and gill-netting (bottom-set and drifting), trawling in shallow water for fish and shrimp, warm-water fishing for tuna, scomberoids, etc., and fishing with various types of traps, haul seines, encircling nets and purse seines.

The proposed seminar study tour has been planned with those objectives in view so that the group of participants from countries in Asia and Africa eligible for technical assistance might discuss their respective problems with each other, and with an experienced group of subject-matter specialists, against a background of a highly advanced and varied fishing industry and gear technology research and development activity.

International (Contd.):

PROGRAM

I SEMINAR

Fisheries specialists from the U.S.S.R. and FAO will deliver a number of lectures and lead a series of discussions under the following main headings:

1. Materials of Fishing Gear:

- 1.1 Terminology and numbering systems.
- 1.2 Characteristics of net materials and methods of testing these.
- 1.3 Relative efficiencies of gear made of different materials.
- 1.4 Preservation and maintenance of gear.

2. Net Making:

- 2.1 Mechanized knitting of webbing.
- 2.2 Knotless nets.
- 2.3 Cutting and joining of machine-made webbing.
- 2.4 Framing and hanging of nets.

3. Rational Design of Fishing Gear:

- 3.1 Engineering theory and experiments with models.
- 3.2 Measuring instruments and underwater observation.
- 3.3 Selectivity; comparative fishing experiments.
- 3.4 Specifying shape, dimensions, materials of gear.

4. Operation of Fishing Gear:

- 4.1 Types and choice of fishing gear (with emphasis on warm-water fishing) with small and medium sized craft; special lectures on gill-netting and long-lining, purse-seining, trawling for shrimp and fish, tuna fishing.
- 4.2 Efficient handling of fishing gear.
- 4.3 Efficiency in handling of catch.
- 4.4 Fish processing on board craft.
- 4.5 Choice of type and size of boat in relation to methods of fishing, distance to grounds, etc.

5. Strategy and Tactics of Fishing:

- 5.1 Location of fish.
- 5.2 Detection of fish.
- 5.3 Attraction of fish.
- 5.4 Electrical fishing.

6. Training of Fishermen and Gear Technologists:7. U.S.S.R. Fisheries:

- 7.1 Review of U.S.S.R. fishing industry.
- 7.2 Organization of the fisheries.
- 7.3 The role of research in the development of fisheries.

These lectures will be conducted mainly in Moscow during the period August 18-31. Additional lectures and discussion periods will be arranged during the Study Tour of the Caspian and Black Sea fisheries.

II DEMONSTRATIONS

During the period devoted to the Seminar, a number of visits will be arranged to fishery institutions and places of interest in and near Moscow. Those will include: the Institute of Marine Fisheries and Oceanography, VNIRO, including the Fishing Technique Laboratory, a net making plant, etc.

III STUDY TOUR

Caspian Fisheries, Based at Astrakhan:

1. Visit to CaspNIRO technological institute.
2. Lectures on U.S.S.R. fishing gear with demonstration of models.
3. Visit to fisheries cooperative, inspection of boats and sea trip to observe trap fishing.
4. Visit to net making plant.
5. Visit to processing plant.
6. Visit to Fisheries Training School.
7. Lectures on pump fishing with light attraction.

Pump Fishing with Light Attraction, Based at Balak:

1. Sea trip to observe pump fishing in the Caspian.

Black Sea Fisheries, Based at Yalta:

1. Inspection of big, modern factory trawler.
2. Sea trips - purse-seining, drifting, trawling.

Field Visits to Observe Fishing in Rivers, Lakes and Reservoirs:

During the period September 1-26, the participants will be conducted on a tour of fishing centers and fishery institutions in the Caspian and Black Sea area. They will have an opportunity to study the conduct of fishing operations with various types of equipment and methods, as well as the handling of the catch, technological and biological research activities, vocational training of fishermen, cooperative and collective fishing activities, and various ancillary undertakings associated with fishing. Frequent discussion periods will be arranged wherein the participants will have ample opportunity to discuss among themselves and with subject matter specialists from the U.S.S.R. and FAO, the equipment and methods observed and their applicability in the home countries of the participants.

The Seminar-Study Tour will close in Moscow on September 28.

Note: See Commercial Fisheries Review, October 1962 p. 2.

* * * * *

RECOMMENDATIONS MADE AT WORLD SCIENTIFIC MEETING ON BIOLOGY OF SARDINES BEING CARRIED OUT:

At the World Scientific Meeting on the Biology of Sardines and Related Species (held in Rome, September 14-21, 1959), several recommendations were made proposing future action by the Food and Agriculture Organization (FAO).

International (Contd.):

In Supplement 1 of the report of the meeting, FAO describes the actions taken or proposes to take on the recommendations as follows:

I. The meeting recommended that FAO should publish an annotated bibliography of sardine research up to 1959. Such a bibliography is available for the years since 1957 in the Current Bibliography for Aquatic Sciences and Fisheries. References in the Current Bibliography to sardine research can be found by referring to the Taxonomic Indexes. FAO therefore proposes to concentrate on preparing a comprehensive bibliography for the years since 1931 when G. C. Wheeler's, A Bibliography of the Sardines (Fish. Bull., Sacramento 1931, vol. 36, 135 pp.), was published until 1956 inclusive, including Sardinella which is not covered in the Current Bibliography. FAO is contacting principal fisheries laboratories concerned with sardine research to see what material is already available. It is proposed that the bibliography will be compiled and issued during the 1962-63 FAO budgetary biennium.

II. It is proposed to publish in the FAO Fisheries Biology Branch Technical Papers Series, an indexed list of names and addresses of scientists concerned with sardine research according to a format which has already been established in other fields such as tuna research workers, algologists. The cooperation of research institutions will be sought in making such a list comprehensive and up-to-date. FAO expects to issue the list in 1962.

III. The need for follow-up meetings on the biology of sardines and on particular aspects of sardine research is expected. The desirability of holding such a meeting within 5 years of the first meeting, as was recommended, will be borne in mind, but FAO will have to consider relative priorities of such a meeting and of meetings on other species groups.

IV. The meeting recommended that similar meetings should be organized on other species for which major fisheries exist. This recommendation was implemented by plans for convening a World Scientific Meeting on the Biology of Tunas and Related Species, which was held in La Jolla, Calif., July 2-14, 1962.

V. The meeting recommended that FAO should continue to work for the standardiza-

tion of routine methods. It is proposed to effect this through contacts with regional fisheries councils and commissions or similar organizations, or where these do not exist, with national research organizations directly.

VI. It was recommended that conversion factors for length dimensions should be submitted by the various institutions to FAO. This has been done, and the data provided is summarized in a table included as table 2, Subject Synopsis 2, A Preliminary Comparative Study of the Growth, Maturity and Mortality of Sardines, by S. J. Holt, which is included in volume 2 of the Proceedings.

Note: See Commercial Fisheries Review, August 1962 p. 49, August 1959 p. 38; February 1959 p. 41.

INTERNATIONAL LABOR ORGANIZATION

WORK CONDITIONS OF COMMERCIAL FISHERMEN REVIEWED:

The secretariat of the International Labor Organization (ILO) is preparing several reports on employment conditions of commercial fishermen for submission to the Second Session of the Committee of Experts on Fishermen, which will be held in the latter part of 1962. The reports concern crew accommodation on board fishing vessels, safety on board fishing vessels, accident insurance of fishermen, and vocational training and certificates of competency.

In 1954, an International Labor Organization Committee of Experts on Fishermen met and recommended conventions concerning minimum age, medical examination, and articles of agreement for fishermen. The conventions were adopted by the 43rd conference of the International Labor Organization in 1959. The first two conventions, concerning minimum age and medical examination, have this year received a sufficient number of ratifications to enter into force.

The United States participated in previous deliberations of the Committee of Experts on Fishermen and plans to send representatives to this year's meeting.

Note: See Commercial Fisheries Review, Sept. 1959 p. 52.

UNESCO INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

SECOND SESSION HELD IN PARIS:

The second session of the Intergovernmental Oceanographic Commission (IOC) convened in Paris, France, September 20-

International (Contd.):

28, 1962. The Commission was established by UNESCO in 1960 for the purpose of promoting coordinated scientific investigation with a view to learning more about the nature and resources of the oceans.

The session was attended by 5 United States representatives and six advisers.

There was general discussion at the second IOC session that other nations not now participating in the International Cooperative Investigation of the Tropical Atlantic (ICITA) program, might join. The delegate from Spain stated that his country was prepared to participate in that program. There was also considerable discussion that Japan might take part in it. Japan operates a number of fisheries research vessels in the tropical Atlantic which would tie in with one of ICITA's main objectives in developing the fisheries off Africa.

A resolution submitted by the United States delegation at the second IOC meeting was unanimously adopted by the Commission.

The resolution designates the Scientific Committee on Oceanic Research of the International Council of Scientific Unions as the advisory body to the Commission on the broad scientific aspects of oceanography. Also designates the Advisory Committee on Marine Resources Research of the Food and Agriculture Organization as the advisory body to the Commission on fisheries aspects of oceanography, the Committee being augmented for this purpose by two additional members from countries not members of FAO to be recommended by the Bureau of the Commission as invited by the Director-General of FAO in his letter of August 17, 1962. Taking into account the important activity of the U.S.S.R. in fisheries oceanography, it is recommended that the two additional members of this Committee be selected from scientists in this field of research in the U.S.S.R. Further, it requests the Bureau and the Secretary of the Commission to consult WMO, IAEA, and other appropriate intergovernmental and nongovernmental organizations of a world-wide and regional nature on international programs in oceanography.

The first session of the Intergovernmental Oceanographic Commission was held in Paris, October 19-27, 1961. At that meeting,

the Commission took the first steps to coordinate national and regional programs on oceanography and to establish the organizational mechanism, within the Commission, which could develop an integrated, well-coordinated international program in oceanography.

Note: See Commercial Fisheries Review, February 1962 p. 55.

* * * * *

WORKING GROUP PLANS PROGRAMS FOR TROPICAL ATLANTIC INVESTIGATIONS:

The proposal for an oceanography-fishery investigation of the tropical Atlantic Ocean, submitted by the U. S. Bureau of Commercial Fisheries to the Interagency Committee on Oceanography (ICO), became a major international undertaking under the sponsorship of the Intergovernmental Oceanographic Commission (IOC).

An IOC Working Group met in Washington at the National Oceanographic Data Center June 20-23, 1962, to draw up plans for an International Cooperative Investigation of the tropical Atlantic. The Bureau's Biological Laboratory, Washington, D. C., with assistance from the National Oceanographic Data Center and the Navy Hydrographic Office, were responsible for the preliminary planning and arrangements for the meeting.

The opening session on June 20 was attended by some 60 persons, including representatives of 14 foreign countries. There was good representation from Universities on the east coast of the United States who have an interest in oceanography.

The purpose of the meeting was to plan in detail the working programs of the Tropical Atlantic Investigations, which are to start early in 1963. Also, to arrange for the exchange and publication of the resulting data, and the preparation and publication of an atlas.

The United States is to contribute seven ships to the investigation, representing the Bureau of Commercial Fisheries, Coast and Geodetic Survey, Woods Hole Oceanographic Institution, Texas A & M, and the Lamont Geological Observatory. Two fisheries research vessels and a large oceanographic vessel from the U.S.S.R. are to participate. Other ships will be from Argentina, Brazil, France, Ivory Coast, Nigeria, and the (former French) Congo.

The plans adopted at the Working Group meeting were to be presented at the Inter-

International (Contd.):

governmental Oceanographic Commission
September 1962 meeting in Paris.Note: See Commercial Fisheries Review, August 1962 p. 56.

* * * * *

COORDINATION GROUP ON THE
INTERNATIONAL COOPERATIVE
INVESTIGATIONS OF THE
TROPICAL ATLANTIC MEETS:

A meeting of the Coordination Group on the International Cooperative Investigations of the Tropical Atlantic (ICITA), a component of the UNESCO Intergovernmental Oceanographic Commission, was held in Paris, France, September 17-19, 1962. The purpose of the Group meeting was to coordinate the plans and programs of the various countries participating in the tropical Atlantic investigations.

The Paris meeting of the Coordination Group was recommended by the Working Group of the ICITA, which met in Washington, June 20-23, 1962.

FISH MEAL

WORLD PRODUCTION, JULY 1962:

According to preliminary data from the International Association of Fish Meal Manufacturers, world production of fish meal in July 1962 amounted to about 227,533 metric tons, an increase of 11.5 percent over world production in July 1961.

Most of the principal countries producing fish meal submit data to the Association monthly (see table).

World Fish Meal Production by Countries, July 1962			
Country	July		Jan.-July
	1962	1961	1962
..... (Metric Tons)			
Canada	5,914	6,287	49,193
Denmark	11,700	8,010	50,570
France	1,100	1,100	7,700
German Federal Republic	7,196	6,229	43,317
Netherlands	-	500	2,400
Spain	2,117	2,116	15,829
Sweden	10	149	2,506
United Kingdom	7,287	6,813	44,935
United States	47,685	57,636	151,435
Angola	1,100	2,046	15,567
Iceland	19,094	18,133	51,424
Norway	36,494	24,730	67,178
Peru	65,716	44,933	610,158
South Africa (including South-West Africa)	22,120	25,300	180,316
Total	227,533	203,902	1,292,528

Note: Belgium, Chile, Japan, and Morocco do not report their fish meal production to the International Association of Fish Meal Manufacturers at present.

The increase in world fish meal production this July was mainly due to more output in Peru (up 46.3 percent), Norway (up 47.6 percent), and Denmark (up 46.1 percent). Norway's increase in production in July 1962 reversed the downward

trend in the previous two months. This year through July, Peru had increased landings of anchoveta and Denmark's landings of industrial fish were up. The increase was partly offset by a sizable drop in fish meal production in the United States (down 17.3 percent), South Africa (down 12.6 percent), and Angola (down 46.2 percent). The menhaden catch in the United States in July 1962 was 14.7 percent below the catch in July 1961.

Peru accounted for 28.9 percent of world fish meal production (for countries listed) in July 1962, followed by the United States with 20.9 percent, and Norway with 16.0 percent.

During the first seven months of 1962, Peru accounted for 47.2 percent of total fish meal production, followed by South Africa with 14.0 percent, and the United States with 11.7 percent.



Belgium

JAPANESE CANNED TUNA PRICES,
MID-SEPTEMBER 1962:

In mid-September, the average prices of Japanese canned tuna, c. & f. Antwerp were:

Yellowfin or Skipjack:	
Lightmeat, solid pack in cottonseed oil, Fancy A:	
48 7-oz. cans	\$7.42 a case
48 3 1/2-oz. cans	\$4.40 a case
6 6 1/2-oz. cans	\$8.75 a case
Dressed tuna with tomatoes:	
48 6 1/2-oz. cans	\$6.70 a case

(United States Embassy, Antwerp, September 18, 1962.)

* * * * *

FROZEN FISH MARKET:

Belgium is importing an increasing amount of frozen fish, and a domestic frozen fish industry has developed. The ready availability of fresh fish in Belgium has dampened the sale of frozen fish in the past. But the appearance of chain stores and supermarkets in recent years has helped change the pattern of consumer buying. Today a wide variety of frozen fish is available, including cod, haddock, whiting, bream, and plaice. Fish fillets are retailed in one-half and one-pound packages. Whole and gutted fish are packed in 2- to 15-pound packages. Frozen shellfish such as shrimp, spiny lobsters or crayfish, and scallops are also available in consumer packages.

The domestic frozen fish industry has a production capacity of 200 metric tons every 24 hours and a cold-storage capacity of about 1,200 cubic meters where fish can be stored at -25° to -30° C. (-13° to -22° F.). It also has a storage capacity of about 2,500 cubic meters where fish can be cooled at 0° to -1° C.

Belgium (Contd.):

(30.2° to 32° F.). Freezing is normally done at temperatures of -30° to -40° C. (-22° to -40° F.), depending on the type of fish.

Round fish are filleted by machine. The machines currently in use can handle 25 pieces a minute, which corresponds to four metric tons an hour for large fish and two tons for smaller varieties. Flatfish are filleted by hand.

Belgium's frozen fish industry has not yet reached full capacity. Because landings are irregular, prices vary and are often high. This affects the still hesitant consumer market and the industry in turn is reluctant to undertake maximum production. Some circles feel that increased production would stimulate consumption. Despite the uncertainty, an increasing quantity of frozen fish is being imported from neighboring countries and the struggle for the consumer market is becoming more and more severe.

The sale of consumer packs of frozen foods in Belgium is still handicapped by the large number of small retail stores which lack refrigerated food cabinets. Belgium has only 4,000 retail outlets equipped with refrigerated food cabinets, far less than several other European countries of comparable population. To encourage the use of frozen foods, some refrigerated cabinets are now being distributed to selected retailers at exceptionally advantageous terms. (Canadian Foreign Trade, September 8, 1962.)

**Brazil****FISHERIES TRENDS, AUGUST 1962:**

The new fishing port at Itajai will be completed by September 1963. The new port costing 37.6 million cruzeiros (US\$82,728) will have cold-storage space for 150 metric tons of fish.

The Third National Meeting of Specialists in Sea Fishery Research was held August 20-24, 1962, at Florianopolis, Brazil. Fishery experts from all Brazil attended. (United States Consulate, Curitiba, September 10, 1962.)

**Canada****WEST COAST VESSELS ENTER TUNA FISHERY OFF SOUTHERN CALIFORNIA AND MEXICO:**

Two British Columbia purse-seiners (the Pacific Harvester and the Dominator) were diverted from the Canadian herring fishery and sent to tuna fishing grounds off California and Mexico in early July 1962. In a short time each vessel had caught a full load of about 100 tons of bluefin and albacore tuna. They unloaded their catch in Steveston, British Columbia, in August 1962. According to reports, the albacore tuna was to be canned in British Columbia, while the bluefin was to be sold to United States canners for processing.

The brine-spray freezing system installed on the purse-seiners by the Fisheries Research Board of Canada was described as an unqualified success. Tuna were frozen solid by the new freezing system and were delivered at Steveston in prime condition. (Facts on Fish, Fisheries Association of B. C., August 1962.)

BRITISH COLUMBIA'S RECORD PACK OF CANNED PINK SALMON:

British Columbia packers had canned a record 1,179,369 standard cases of pink salmon by September 15, 1962, according to preliminary data from the Canadian Department of Fisheries. Pink salmon accounted for 67.6 percent of the total British Columbia canned salmon pack of 1,744,839 cases on September 15, 1962. The pack also included 289,972 cases of sockeye salmon, 149,782 cases of silver salmon, 107,940 cases of chum salmon, and 17,776 cases of miscellaneous species of salmon.

The British Columbia pack of sockeye salmon is heavily dependent on returns to the Fraser River system of the Adams River race of sockeye salmon. The International Pacific Salmon Fisheries Commission early this year predicted a low return of Adams River sockeye because the river flow was low when the yearling salmon entered the salt water in 1960. The returns bore out this prediction and the Commission was forced to restrict fishing severely to ensure an adequate escapement to the spawning grounds. This year's poor Adams River run of sockeye salmon was particularly disappointing because it was based on brood stock from the near-record return in 1958.

Canada (Contd.):

Returns of sockeye salmon to the Skeena River in the northern section of British Columbia were also light.

GOVERNMENT LIBERALIZES FISHING VESSEL SUBSIDY REGULATIONS BY DROPPING VESSEL REPLACEMENT PROVISION:

The requirement that a steel fishing trawler built with the aid of a Government subsidy must replace a steel or wooden fishing vessel was not included in amended Ship Construction Assistance Regulations effected by Order-in-Council of the Canadian Government and published in the Canada Gazette, August 22, 1962. This means applicants no longer have to withdraw a steel or wooden fishing trawler from the fishing fleet in order to qualify for a capital subsidy toward the cost of building a new steel fishing trawler.

The new Regulations continue the capital subsidy for new steel fishing trawlers at the old rate of 50 percent of approved costs. The subsidy may be paid for the construction of new trawlers to be operated out of a port in any of the Provinces of New Brunswick, Newfoundland, Nova Scotia, Prince Edward Island, or Quebec. The subsidy will now be applicable only to vessels on which construction was begun after May 12, 1961. Trawlers built with the aid of a subsidy must have a steel hull and be at least 75 feet in length. The Regulations stipulate that shipowners who receive a subsidy must agree to undertake to retain the vessel on Canadian registry for a period of five years, and not to sell or transfer the vessel without the consent of the Canadian Maritime Commission and the approval of the Treasury Board.

Note: See Commercial Fisheries Review, Aug. 1961 p. 58.



Colombia

NATIONAL FISHING EXPOSITION TO BE HELD NOVEMBER 20-30, 1962:

The Colombian Second National Fishing Exposition and Second National Fishing Congress will be held in Bogota November 20-30, 1962, according to the Colombian Fishermen's Association and Fishing Industries. The Association is interested in having

United States firms display fishing equipment and supplies at the fair. They are also interested in United States investments in Colombia's fishing industry to help exploit their fish resources along both the Atlantic and Pacific Coasts. (United States Embassy, Bogota, September 17, 1962.)



Cuba

FISHING PORT TO BE BUILT BY SOVIETS:

Plans for the building of a major fishing port in Cuba by the Soviets were announced by the Prime Minister of Cuba on September 25, 1962. The port will be used as a base for the Soviet's Atlantic fishing fleet. The Prime Minister said the facilities will make unnecessary the trips Soviet trawlers now make to Eastern European ports for maintenance and overhaul.

A small fleet of Russian trawlers, equipped with refrigeration and electronic detection equipment, arrived this summer in Havana. It was reported that Soviet crews would instruct Cubans in the operation of the vessels and that the fleet ultimately would become the property of the Cuban Government. Earlier this year the Prime Minister said that Cubans would pay for the Soviet vessels by exporting fish to the Soviet Union. The Russians were to provide tinplate for canning the fish.

After signing of the contract by the Prime Minister and the Soviet Fisheries Minister, Cuba's Prime Minister appeared on television to make the announcement. He said the port will cost 12 million pesos (about US\$12 million at the 1960 rate of exchange). The location of the port was not announced.

The Soviet Union will pay for the cost of building the port through a "credit" to finance purchase of the machinery needed to operate the port. The Prime Minister stated that it will be built by Cuban laborers and material; Cuba will be compensated for this by additional food shipments from the Soviet Union. But the port will actually belong to Cuba and will be operated by Cuban workers, the Prime Minister said.

The port will be equipped with facilities for vessel repairs so that Soviet vessels will not have to return to Russia for periodic overhaul. The port would provide facilities for 115 to 130 medium trawlers. The port will

Cuba (Contd.):

be built and used by the Soviets under a 10-year contract. But the Prime Minister said the pact was a mere formality. "It surely will continue much longer than 10 years," he said.

Thus far the largest Cuban fleet is believed to operate out of the Las Villas Province town of Caibarien, on the north coast of central Cuba. The fishermen sail in locally-made 33-foot motor trawlers designed to hold a catch of about 1,000 pounds.

The prime Minister said the Cuban fishing fleet next year would comprise 5 Soviet vessels at present attached to the fleet but to be bought outright, 5 Japanese vessels due for delivery at the end of this year, 2 Polish vessels, and 50 75-foot vessels being built in Cuba.

He claimed that next year 110 75-foot vessels and 12 122-foot vessels to be built in Cuba would be added to this fleet.

Note: Cuban Government considers peso par with U. S. dollar, but foreign exchange brokers in Miami give about 16 U. S. cents for a Cuban peso.

SOVIET-BLOC FISHERY TECHNICIANS IN CUBA:

A June 1962 research report issued by the Department of Fisheries of Cuba lists a Soviet technician on the staff of the Fish Technology Section. In addition, a specialist from East Germany is in the Cuban section of Resource Development.



Denmark

FISH FILLETS AND BLOCKS AND FISHERY INDUSTRIAL PRODUCTS EXPORTS, JULY 1962:

Denmark's exports of fresh and frozen fillets and blocks during the first seven months of this year were 17.4 percent greater than in the same period of 1961, mainly because of an increase of 163.9 percent in exports of herring fillets. Exports of flounder and sole fillets increased 13.4 percent, but exports of cod and related species declined 7.3 percent. During the first seven months of this year exports to the United States of fresh and frozen fillets and blocks of about 9.1 million pounds (mostly cod and related species) were up 2.3 percent from the exports of about 8.9 million pounds in the same period of 1961.

Denmark's exports of fresh and frozen fish fillets and blocks during July 1962 were 21.9 percent above exports in the same month in 1961. Of the total exports, about 0.7 mil-

lion pounds (mostly cod and related species) were shipped to the United States in July.

Denmark's Exports of Fresh and Frozen Fish Fillets and Blocks and Fishery Industrial Products, July 1962 1/

Product	July		Jan.-July	
	1962	1961	1962	1961
 (1,000 Lbs.)			
Fillets and Blocks:				
Cod and related species.	1,814	2,325	21,126	22,799
Flounder and sole	3,121	2,619	14,568	12,851
Herring	1,717	406	12,051	4,567
Other	28	128	447	828
Total	6,680	5,478	48,192	41,045
 (Short Tons)			
Industrial Products:				
Fish meal, fish solubles, and similar products ..	7,221	4,737	39,131	26,784

1/Shipments from the Faroe Islands and Greenland direct to foreign countries not included.

Denmark's exports of fish meal, fish solubles, and similar products in January-July 1962 were 46.1 percent greater than in the same seven months a year earlier.

During July 1962, Denmark's exports of fish meal, fish solubles, and similar products were 52.4 percent above the amount shipped out in the same month of 1961. The principal buyers were the United Kingdom and West Germany.

TO MANUFACTURE FOOD FOR RAINBOW TROUT GROWERS:

Food for rainbow trout, formerly imported by Denmark from the United States, will now be manufactured in that country. The fish food is used by the Danish pond trout industry, according to the United States Regional Fisheries Attache. A group of Danish brook trout growers recently formed a share company, on a license basis, to make food for rainbow trout. The plant will be located in Herring, a small town in the trout-growing area of Jutland. It had not been decided whether to build, buy, or rent a factory, but the mid-Jutland site was chosen because it would be easier to ship the product to trout pond operators throughout that area. The chairman of the new enterprise is the owner of a trout farm having 250 ponds, and is also head of Danish Cooperative Trout Export. Shares in the new company amounting to 200,000 kroner (US\$29,000) already have been subscribed by trout pond operators, and the total investment in the firm is expected to be 500,000 kroner (\$72,400).

Denmark has imported about 500 metric tons of United States-produced trout food annually. When the new Danish



A pond trout enterprise in Denmark.

Denmark (Contd.):

company gets into full operation, the annual production will be about 10,000 tons, enough to cover two-thirds of the Danish demand for trout food. The price is expected to be cut in half from what it was formerly.

In May 1962, Danish trout-growers were successful in having the Folketing (Parliament) change a law permitting imports of fish food after furnishing the Ministry of Fisheries full information on its composition, but not requiring as was formerly the case, that the composition be disclosed to buyers of the product. The Danish pond trout industry wanted the law changed because the United States manufacturer of the fish food did not want to reveal the exact composition of his product for competitive reasons. The United States-produced fish food was found to be especially suitable in raising Danish rainbow trout.

Trout food is manufactured by a special process, and United States biologists have worked on its composition for 20 years. Attempts have been made in Denmark to put out a similar fish food, but the drawback was that it was not possible to analyze the composition of the product imported from the United States. The result was the purchase of rights from the United States firm to manufacture the product in Denmark. The owner of the United States firm was in Denmark this past summer to conclude the licensing negotiations which involved an advance payment of \$10,000, and a subsequent 6 percent royalty on all sales.

A large proportion of the 600 Danish trout pond operators already use the food for fry, and also for trout raised for stocking purposes. But it is now believed that the product can be used for the entire trout output. According to the head of the new Danish fish food firm, that type of fish food produces the healthiest trout specimens. A so-called "wet food" was used by the Danish trout growers before they started importing the dry fish food some 5 years ago. About twice as much dry food will be fed the trout. The dry food is easier to handle, and the trout pond can be operated with less labor. If a trout pond operator shifts over to dry food for his entire production, he can figure that his fish food costs will balance out. (European Regional Fisheries Attache, United States Embassy, Copenhagen, August 1, 1962.)

* * * * *

FISHERIES TRENDS, JANUARY-JUNE 1962:

Summary: Denmark's landings and exports of fishery products in the first half of 1962 were at record levels. Industrial fish prices were up slightly, but there had been no agreement on minimum prices for plaice. For the first time countries in the European Economic Community (EEC) are buying more Danish fishery products than countries in the European Free Trade Association (EFTA). Four Danish vessels may go to the Philippines to fish sardines for a United States company. Two of four freezerships for the U. S. S. R. have been launched in Copenhagen. A fish processing plant with a daily capacity of 40,000 pounds of fish fillets and a fish reduction plant are planned for Greenland. Denmark was not invited to the first Common Market fisheries policy meeting of EEC countries. But Denmark's largest fisheries association has asked to have an observer at the next meeting of the European Federation

of Fishing Enterprises (EUROPECHE). Another International Fisheries Fair is planned for Copenhagen in 1964. Increased United States exports to Denmark are not probable. Fishing limits discussions are quiet.



Fig. 1 - Drying plaice. The fishery for plaice is the most valuable in Denmark. Plaice is marketed alive in fish shops throughout Denmark, but sales of plaice fillets are increasing yearly--production in 1960 reached 24,000 metric tons.

Landings: Landings by Danish vessels in the first half of 1962 were 27 percent greater than in the same period of the previous year and 6 percent greater than in the first half of



Fig. 2 - Part of the harbor of Hvide Sande on the west coast of Jutland, Denmark. Landings at this port consist mostly of plaice and herring.

the record year 1959. The increase in 1962 landings would be even more impressive if landings in Denmark by foreign vessels were considered. Heavier landings of industrial fish accounted for most of the increase. A slight increase in industrial fish prices helped attract vessels to the fishery. In June, the arrival of industrial fish at Esbjerg, Denmark's largest port, was so great, 500 tons or more had to be dumped at sea.

Denmark (Contd.):

Table 1 - Danish Fisheries Catch, January-June 1962, 1961, and 1959

Species	January-June		
	1962	1961	1/1959
 (Metric Tons)		
Landings in Denmark by Danish Vessels:			
Salt-Water Fish:			
Plaice	19,883	19,122	12,284
Cod	39,277	40,818	36,665
Herring	85,353	70,144	112,351
Other salt-water fish ^{2/} ..	178,384	123,555	139,752
Total salt-water fish ..	322,897	253,639	301,052
Fresh-Water Fish:			
Pond trout	3,537	3,679	3,506
Fresh-water fish	1,349	1,251	1,230
Total fresh-water fish ..	4,886	4,930	4,736
Shellfish:			
Mussels & starfish	8,036	5,885	11,570
Shrimp and other shellfish	2,970	2,462	1,761
Total shellfish	11,006	8,347	13,331
Total fish and shellfish ..	338,789	266,916	319,119
Landings in Denmark by Foreign Vessels	44,078	25,341	33,164
Danish landings in foreign ports of United Kingdom, Sweden, & Holland	2,355	5,149	2,322
^{1/} Year of record total catch which amounted to 667,800 metric tons valued at 370.2 million kroner (US\$53.6 million).			
^{2/} Mostly industrial fish.			
Source: Ministry of Fisheries.			

Minimum Ex-Vessel Prices: The plan for minimum ex-vessel prices for plaice and other species remains in the talking stage. The minimum ex-vessel price plan calls for prices to be supported by Government and industry through a pool arrangement. The Danish Fisheries Association supports the plan, but the next largest group, the West Jutland Association, is less enthusiastic.

Exports: Total exports of fishery products in the first half of 1962 were greater than in the same period of the record year 1961. The increase was 16 percent in value and 7 percent in quantity. Fishery exports to the United States increased 26 percent in value due mainly to larger shipments of canned herring (up 357 percent in value) and frozen spiny lobsters (up 110 percent in value). But the value of pond trout exports to the United States in 1962 dropped 36 percent, and this means better markets are being found nearer Denmark.

Denmark's exports of fishery products to European Common Market countries in the first 5 months of 1962 were 10 percent above exports to EFTA countries. Denmark is a member of the EFTA. Denmark's exports of fishery products to EEC countries in the first 5 months of 1962 were 50 percent greater than in the same period of 1961, while exports to EFTA countries increased by only about 15 percent.

Table 2 - Danish Fishery Exports, January-June 1961-1962						
Products	January-June					
	1962		1961		Value	
	Quantity	Value	Quantity	Value	Quantity	Value
	Metric Tons	1,000 Kroner	1,000 US\$	Metric Tons	1,000 Kroner	1,000 US\$
All Countries:						
Fish and fish products	136,350	250,790	36,365	127,704	216,459	18,518
United States:						
Pond trout	347	2,648	384	543	4,135	600
Cod fillets, frozen	3,669	11,111	1,611	3,305	8,922	1,439
Lobster, frozen	96	1,972	286	63	941	136
Herring, canned	1,286	4,541	658	161	997	144
Other	442	2,654	385	722	2,188	319
Total exports to the United States	5,842	22,926	3,324	4,794	18,193	2,638

(Preliminary data.)
Note: One Danish krona equals US\$0.165.
Source: Ministry of Fisheries.

^{1/}Excludes fish oil.
^{2/}One Danish krona equals US\$0.146.
 Source: Ministry of Fisheries.

Plans For Joint Danish-American Fishing Venture in the Philippines: Several Skagen fishermen are negotiating a contract with a United States company to take four Danish cutters to the Philippines to fish for sardines. The catches would be landed at a Philippine plant for reduction and canning.

Freezer Mothership Vessels Built for U.S.S.R.: Two of four freezer motherships constructed in Copenhagen for the U.S.S.R. were launched in the second quarter of 1962. The 2,600-ton vessels will dress and freeze--but not fillet--the catch of accompanying fishing vessels. Detached cod ends will be hauled aboard over a stern slipway.

Processing and Marketing: A new fisheries enterprise has been planned for Godthaab, Greenland. Financial backing in the amount of 7.5 million kroner (US\$1.1 million) will come from Denmark, the Faroe Islands, and the Royal Greenland Trade Department. Plans called for construction of a fillet plant with a daily capacity of 40,000 pounds in the summer of 1962. Machinery is to be installed during the winter and operations will begin August 1, 1963. A fish reduction plant is also planned for Godthaab.

The last reports concerning the cooperative filleting plant which fishermen are hoping to establish in Esbjerg state that 800,000 kroner (US\$116,000) of the one million kroner (US\$145,000) needed has been pledged.

Tests to determine whether quality is materially affected, if fillets are prepared from frozen fish, have been started at the Technological Research Laboratory of the Ministry of Fisheries in Copenhagen. The tests are expected to be completed late in 1962.

Findus International, Ltd., a new Swiss-Norwegian-Swedish frozen foods company, was established in May 1962. The new Company took over all operations in Scandinavia of the North Norway fish deep-freezing firm

Denmark (Contd.):

A/S Findus including a large modern fish filleting plant at Fredrikshavn, Denmark, which employs 300 people. Findus International, Ltd. plans to expand. In a recently issued booklet, *The Findus Saga*, the company estimates that more than 200,000 shops in Western Europe now sell about 300,000 metric tons of frozen foods. In 1970, it is expected that 400,000 to 500,000 shops will sell from one million to 1.5 million tons. In Sweden, Findus maintains storage temperatures of at least -4°F . throughout the distribution chain and -22°F . in its main depots. It designed the *Polar Reefer*, the first ship built exclusively for transporting pallet loads of frozen foods. The *Polar Reefer*'s capacity is 550 tons at -13°F . Current Findus production is reported to be about 40,000 tons annually, consisting of about 100 products.

European Economic Community: The Danish fishing industry is awaiting the development of a European Common Market fisheries policy with considerable interest. Disappointment was expressed at the recent announcement that the Common Market countries will meet this fall before conferring with Denmark, Norway and the United Kingdom in regard to fisheries matters.

The Danish Fisheries Association with a membership of about 11,000 from 175 local groups has applied to EUROPECHE, the federation of national fisheries associations in Common Market countries, for the privilege of sending an observer to the next EUROPECHE meeting.

Fairs and Exhibits: Sponsors of the Fourth International Fisheries Fair which was held in Copenhagen April 1962 have announced that the Fifth International Fisheries Fair will be held September 4-13, 1964.

Imports from United States: There is little opportunity for United States firms to sell more fishery products in Denmark. U. S. distributors visiting Denmark believe frozen scallops might find a larger European market, possibly including Denmark.

Fishing Limits: There have been no further official pronouncements on progress or developments in regard to negotiations over fishing limits around the Faroe Islands since Denmark gave notice to the United Kingdom on April 28, 1962, of termination of the 1959 agreement on fishing limits in the Faroes.

Industry and government views expressed in the press in regard to an extension of Denmark's own fishing limits agree that no change should be sought while the Danish application to join the Common Market is pending. (European Fisheries Attache, United States Embassy, Copenhagen, August 15, 1962.)

Notes: (1) See *Commercial Fisheries Review*, Sept. 1962 pp. 69-70, Aug. 1962 p. 59; July 1962 pp. 61 and 88; June 1962 p. 47; March 1962 p. 37; Feb. 1962 p. 64.

(2) Values converted at rate of one Danish krone equals US\$0.145.



Faroe Islands

FISHERIES TRENDS,
EARLY SEPTEMBER 1962:

Marketing Frozen Fillets: The fishing industry in the Faroe Islands is concerned over reports of sharply decreased sales of frozen fillets, mainly cod and haddock, in the United Kingdom. About 500 metric tons of fillets have been exported this year at profitable prices through the Faroese sales organization in Thorshavn and a large British importing firm in Grimsby, England, the United States Regional Fisheries Attache stationed at Copenhagen reports. Faroese newspapers report that the senior officer in the British importing firm has stated that his company's refrigerated warehouses are filled with quick-frozen fillets which they have been unable to move at prices competitive with the iced fish still favored by many British housewives. British imports of Faroese frozen fillets are not expected to stop completely but they may be curtailed.

An especially large number of vessels had been expected to participate this fall and winter in the Faroese local long-line fishery for cod and haddock for delivery to the British market. The United States has imported Faroese fishery products in the past and is now being mentioned as a market for this year's production of frozen fillets.

The total production of fillets in the Faroe Islands was 1,585 tons in 1961, 1,223 tons in 1960, and 571 tons in 1959, according to the Faroese release, "Faroese in Figures," No. 18, June 1962.

Salted Herring: Despite favorable weather, only 43,700 barrels of salted herring had been landed in Faroese ports by September 1, 1962, as compared with 79,300 barrels by the same date last year. The Faroese herring

Faroe Islands (Contd.):

sales organization has arranged salted herring sales contracts calling for the delivery of 70,000 barrels to Sweden, 20,000 barrels to Denmark, and 3,000 barrels to East Germany. In order to meet the contracts, an extra effort was going to be made to increase the herring catch between mid-September and the beginning of October. That period is the last, but usually the best, part of the herring season. (September 19, 1962, report from the Fisheries Attache, United States Embassy, Copenhagen.)



German Federal Republic

JAPANESE CANNED TUNA PRICES:

In mid-September 1962, Japanese canned tuna price quotations to West German importers for light meat solid pack tuna in cottonseed oil, c.i.f. West German ports, were:

Bluefin: (48 3½-oz. cans) .. \$4.17 a case
 (48 7-oz. cans) .. \$7.10 a case
 Skipjack or yellowfin:
 (48 7-oz. cans) .. \$7.30 a case

German importers expect little change from the above prices in the near future. The canned tuna products described above make up the bulk of West German imports of canned tuna from Japan. Chunk style tuna and tuna packed in brine are imported only occasionally. (United States Embassy, Bremen, September 14, 1962.)



Greece

NEW MECHANICAL DEVICE FOR HAULING IN PURSE-SEINE NETS INVENTED BY SHIPOWNER:

A new mechanical device for hauling in purse-seine nets was recently installed in a Greek purse-seiner. It was reported as giving satisfactory results. The device, which was invented by a Greek shipowner, consists of one pulley which is hung from a mast at the vessel's center towards the stern. A screw inside the mast starts the pulley operating. The pulley, together with a clutch located inside the vessel, is powered by the main engine.

The pulley is made of hard aluminum and has an open space of 45 centimeters (17.7 inches). The inside of the pulley is rubber-coated. As it turns, the net is hauled in without causing the slightest damage to the mesh.

By using this device, a purse seine 1,800 feet long and about 400 feet deep has been hauled in full of fish in 18 to 22 minutes with the aid of only 3 men.

The Greek purse-seiner using the new invention is owned and operated by the inventor. In 20 days of fishing, the vessel caught 88,000 pounds of fish which was considered an achievement in the Greek commercial fishery.

The operation of the new mechanical device was hailed as significant in Greece's fishing industry. It was pointed out that it was inspired by an entirely different concept from that of the "power block" used in the United States tuna fishery. (Alieia, Athens, Greece, August 1962.)

FREEZER-TRAWLER FLEET EXPANDED:

Another freezer-trawler, the *Zephyros IV*, was added to Greece's Atlantic fleet of freezer-trawlers in August 1962. This brings the Greek freezer-trawler fleet engaged in the Atlantic fishery to 17 vessels of that type. The vessel was bought in Germany, and underwent extensive modifications at Piraeus under the technical supervision of one of Greece's foremost fishing firms. The new vessel is the fourth of that type owned by the firm.

The *Zephyros* is 144 feet long by 26 feet broad, has a depth of 14 feet, and is 399 gross tons. Its main engine is 820 horsepower, and during her trials, the vessel developed a speed of 12½ knots.

The new vessel is capable of freezing 12 metric tons of fish every 24 hours at -45° C. (-49° F.), and its holding capacity of frozen fish is 170 tons at -25° C. (-13° F.).

The day following her dedication, the vessel left for the Mauretania fishing grounds with a crew of 26.

In July 1962, 4 Greek freezer-trawlers landed 1,191 metric tons of frozen fish, as against 6 vessels with 1,850 tons the previous month. In July 1961, 4 vessels of this type brought in 1,055 tons of frozen fish. In the period January through July 1962,

Greece (Contd.):

Greek freezer-trawlers landed 8,672 tons of frozen fish as compared with 7,543 tons in the same period of 1961. (Alieia, Athens, Greece, August 1962.)

* * * * *

NEW FISH CANNERY TO BE BUILT:

The construction of a large fish cannery is planned for Cavalla in eastern Macedonia, an important fishing center in Greece. The plant is expected to be able to process from 800 to 1,000 metric tons of fish annually, mainly sardines and anchovies.

The proposed cannery will be an enterprise operated mainly by owners of local salt-fish plants and Cavalla fishing boat owners, who will be sold proportional shares of stock. (Alieia, Athens, Greece, August 1962.)



Guatemala

JOINT JAPANESE-GUATEMALA FIRM FISHING SHRIMP OFF CENTRAL AMERICA:

The shrimp fishing operation along the coast of Guatemala, Central America, jointly carried out by a Japanese firm and local Guatemala interests, has been using 14 vessels and some chartered vessels. Fishing conditions were reported favorable in August 1962.

The joint company has decided to add six more vessels, thus expanding its fleet to 20 vessels by November in an effort to increase catches. The six vessels are now under construction at a shipyard in Jacksonville, Fla., and they are of the 50-ton class. (Suisan Tsushin, August 30, 1962.)



Iceland

FISHERIES TRENDS, EARLY SEPTEMBER 1962:

Summer Herring Fishery: A record catch of 311,838 metric tons of herring valued at 392.9 million kronur (US\$9.1 million) had been landed off the north and east coasts by September 9, 1962, as compared with 211,136 tons caught by the same date during last

year's good season. The 1962 summer herring fishery is about over, but south coast herring operations could not begin because no price had been set for landings there. As many as 235 vessels took part in the summer herring fishery this year. The average share of the catch for deckhands amounted to 58,892 kronur (US\$1,368) and, for skippers, 148,073 kronur (US\$3,439).

Herring Salting: Summer herring salting was resumed August 25, because of the possibility of a new contract for 20,000 barrels with the U. S. S. R. Salting had been shut down temporarily since August 19, because all existing contracts for summer herring were filled.

The first contract for salted herring from the anticipated south coast winter catch was signed and it provided for delivery of 25,000 barrels of specially-cured split herring to West Germany.

Other Fisheries: The off-shore trawlers continued bringing in good catches (principally of ocean perch). They were fishing off western Greenland and, to a limited extent, off Newfoundland. The 15 trawlers operating off Iceland reported rather poor catches of cod and haddock. An Icelandic fisheries scientist was quoted in the British Fishing News as saying that Iceland's extension of its fishing limits has had an extremely beneficial effect upon fish stocks off the Icelandic coast where the small fishing vessels have done well. He predicted that before long the increased fish stocks would move outward where the trawlers would benefit.

The lobster catch was very good and was expected to exceed considerably last year's catch of 2,000 tons. (United States Embassy, Reykjavik, August 31, and September 14, 1962.)

* * * * *

SEEKS U. S. LOAN TO AID FISH-PROCESSING PLANTS:

The Icelandic Government has requested a loan of 29 million kronur (US\$673,478) from the United States from the 1961 and/or 1962 U. S. Public Law 480 (Agricultural Trade Development and Assistance Act of 1954) agreements. Iceland asked that the loan be made to the Icelandic Development Bank for the Fisheries Loan Fund. Iceland's Fisheries Loan Fund would use the money mainly to increase loans to fish processing plants. U. S. loan under Public Law 480 would be made in Icelandic kronur rather than in U. S. dollars.

Iceland's Fisheries Loan Fund has been used mainly to improve the fishing fleet. By now increasing fish processing facilities through loans, Iceland hopes to add value to fish exports, which make up 93 to 96 percent of its tangible exports. It is estimated that a large part of loans to fish processing plants (freezing plants, oil and meal plants, salt fish plants)

Iceland (Contd.):

would be absorbed by local costs, such as labor, supplies, and construction material. Less than a third would go for machinery such as boilers, motors, filleting machines, conveyor belts, and refrigeration units.

The United States has already used the authority of Public Law 480 to aid Iceland's Industry Loan Fund. This fund makes modest loans to individual manufacturers to purchase machinery. The Industry Loan Fund loaned 4.4 million kronur (US\$102,183) in 1960. The Fisheries Loan Fund has a far greater scope and loaned 182.9 million kronur (US\$4.2 million) in 1960.

Part of a statement by the Government of Iceland describing the Fisheries Loan Fund follows:

History and Operations of the Fund: The Fisheries Loan Fund was established by law in 1905 for the purpose of promoting the development of fisheries in Iceland with loans for purchase of new fishing vessels. At that time a breakthrough was taking place in Icelandic fisheries as the first motor boats were introduced. The Fund was later authorized to grant loans for construction of fish-processing plants as processing of fish became more important.

The Fund grants loans to a maximum of 75 percent of the purchase price of new fishing vessels. The loans are repaid in 15 years with 6-1/2 percent interest. Equipment loans are of shorter duration. The maximum amount loaned for processing plants is 60 percent of construction costs, which must be repaid within 12-15 years.

Sources of Income: The main source of income to the Fund is a 1.8-percent levy on exports of fish and fish products, which yielded 35.3 million kronur (US\$819,786) in 1961. Interest on loans (gross) amounted to 15.4 million kronur (US\$357,640). The Fund receives besides this an annual Government grant of 2.0 million kronur (US\$46,447). The debts of the Fund consist almost entirely of long-term foreign credits.

Loan Operations in Recent Years: Loan operations increased sharply in 1960 and continued at the higher level in 1961 and 1962. New and larger steel vessels were bought to replace smaller wooden ones. Operators started to equip their boats with a new and more efficient technique for catching herring. The Fund's current resources were not sufficient to meet the heavy demand for loans so in 1961 long-term loans were taken by the Fund.

Operations in Period Ahead for which Additional Financing is Sought: Great technical changes have been taking place in fishing in recent years requiring large investments in new equipment. It is therefore of great importance to finance such equipment on a fairly large scale. At the same time it is becoming important to invest more in fish-processing plants both to improve efficiency and make it possible to receive the larger catches now being landed. Here the main emphasis will be on freezing plants and herring processing plants.

The larger part of the resources of the Fund will continue to be used for financing new boats built abroad. Additional financing to the amount of 29 million kronur (US\$673,478) is sought in order to make it possible for the Fund to meet other urgent needs of the fishing industry. It is planned to use the requested funds for the following categories of loans:

1. Loans to fish-processing plants to enlarge capacity and install more modern machinery.
2. Loans for new equipment and modernization of fishing boats in order to reap the benefit of new fishing techniques.
3. Loans to finance the building of fishing boats in Icelandic yards. These are mostly the smaller type wooden boats used for inshore fishing. (United States Embassy, Reykjavik, September 19, 1962.)

EXPORTS OF FISHERY PRODUCTS,
JANUARY-JULY 1962:

During January-July 1962, there was a considerable increase in exports of frozen herring, frozen fish fillets, salted herring, herring oil, and herring meal as compared with

Product	Jan.-July 1962			Jan.-July 1961		
	Qty.	Value f.o.b.		Qty.	Value f.o.b.	
		Metric Tons	1,000 US\$		Metric Tons	1,000 US\$
Salted fish, dried	1,370	26,402	813	2,807	52,481	1,375
Salted fish, uncured	22,449	273,931	6,355	22,173	222,334	5,825
Wings, salted	983	11,271	281	1,250	11,517	302
Stockfish	5,891	145,877	3,384	6,062	139,640	3,659
Herring on ice	4,899	17,144	398	3,754	9,830	252
Other fish on ice	13,832	63,839	1,481	16,880	70,524	1,848
Herring, frozen	16,947	87,423	2,029	10,969	48,151	1,262
Other frozen fish, whole	973	12,015	300	736	7,729	202
Frozen fish fillets	32,575	560,480	13,003	22,955	346,692	9,083
Shrimp and lobster, frozen	195	16,758	389	255	18,477	484
Roes, frozen	617	11,770	273	504	6,547	172
Canned fish	155	7,874	183	119	7,640	200
Cod-liver oil	2,767	22,097	513	2,447	19,806	519
Lumpfish roes, salted	362	5,625	131	394	6,580	172
Other roes for food, salted	2,743	37,899	879	2,468	24,897	632
Roes for bait, salted	956	6,112	142	976	5,511	144
Herring, salted	17,670	161,937	3,757	11,561	95,084	2,491
Herring oil	19,917	85,740	1,988	4,968	26,883	704
Ocean perch oil	15	59	1	196	1,109	29
Whale oil	388	2,558	59	917	6,452	169
Fish meal	17,879	112,062	2,800	24,401	93,886	2,460
Herring meal	23,517	150,592	3,494	12,900	57,701	1,512
Ocean perch meal	34	204	5	1,898	6,954	182
Wastes of fish, frozen	2,639	6,487	150	5,247	9,874	260
Liver meal	195	1,285	30	235	1,287	34
Lobster and shrimp meal	-	-	-	249	540	14
Whale meal	402	2,151	50	1,192	4,168	109
Whale meat, frozen	1,162	9,046	210	315	2,090	55

Note: Values converted at rate of 1 kronur equals 2.32 U. S. cents in 1962 and 2.42 U. S. cents in 1961.

the same period in 1961, according to the Statistical Bureau of Iceland's Statistical Bulletin, August 1962. Exports of fish meal and ocean perch meal showed a considerable decrease in the first seven months of 1962.

UTILIZATION OF FISHERY
LANDINGS, JANUARY-MAY 1962:

How Utilized	January-May	
	1962	1961
.. (Metric Tons) ..		
Herring^{1/} for:		
Oil and meal	57,924	19,275
Freezing	13,585	7,416
Salting	4,832	6,037
Fresh on ice	7,718	4,119
Canning	69	-
Groundfish^{2/} for:		
Fresh on ice landed abroad	12,522	13,523
Freezing and filleting	74,853	80,462
Salting	59,625	51,408
Stockfish (dried unsalted)	29,918	40,384
Home consumption	4,361	3,395
Oil and meal	974	1,449
Shellfish for:		
Freezing: Lobster	122	252
Shrimp	263	304
Canning (shrimp)	86	126
Total production	266,852	228,150
1/Whole fish.		
2/Drawn fish.		

Iceland (Contd.):

FISHERY LANDINGS BY PRINCIPAL SPECIES, JANUARY-MAY 1962:

Species	January-May	
	1962	1961
	..(Metric Tons) ..	
Cod	141,258	143,420
Haddock	14,447	15,836
Saithe	5,561	4,238
Ling	4,065	3,321
Wolfish (catfish)	8,659	8,091
Cusk	3,517	3,438
Ocean perch	2,656	9,976
Halibut	523	595
Herring	84,129	36,847
Shrimp	349	430
Other	1,688	1,958
Total	266,852	228,150

1/ Except for herring which are landed round, all fish are drawn weight.



Japan

TENTH SALE OF CANNED TUNA IN BRINE FOR EXPORT TO THE U.S.:

The Japan Canned Foods Exporters Association convened a meeting of its Canned Tuna Sales Standing Committee on September 18, 1962, and approved the tenth sale of canned tuna in brine for export to the United States. A total of 130,000 cases (48 7-oz. or No. $\frac{1}{2}$ cans per case) of tuna packed in brine (consisting of 75,000 cases of white meat and 55,000 cases of light meat tuna) were approved for this sale, with deliveries to be completed by November 24. Export prices per case remain unchanged: white meat US\$10.40; light meat \$7.80 a case, f.o.b. Japan.

Japanese export of canned tuna in brine to the United States up to and including the tenth sale will total 2,073,000 cases, consisting of 1,178,000 cases of white meat and 895,000 cases of light meat tuna. (*Suisan Tsushin*, September 20, 1962.)

PACKERS SEEK REMOVAL OF RESTRICTIONS ON U. S. IMPORTS OF CANNED TUNA:

The Japanese periodical *Nihon Suisan Shimbun* of October 8 reports that the Japan Canned Tuna Packers Association petitioned the Fisheries Agency to negotiate, during the meeting of the Japan-United States Joint Committee on Trade and Economic Affairs

slated to be convened in Washington, D. C., in November 1962, for removal of restrictions placed by the United States on imports of Japanese canned tuna. The Canned Tuna Packers Association is reportedly seeking removal of the 12.5-percent tariff imposed by the United States on imports of tuna packed in brine and the reduction of the United States tariff on imports of tuna packed in oil from the present 35 percent to 12.5 percent.

According to the Japanese periodical, the existing United States tariff quota exerts a tremendous effect on Japan's canned tuna exports. Originally, the United States tariff quota on imports of canned tuna in brine was established in 1955 only to regulate imports from Japan, but, subsequently, European countries also began to export canned tuna in brine to the United States at lower prices than Japan, thus needlessly increasing price competition in marketing that product.

The percentage of United States imports of Japanese tuna packed in brine has declined yearly during the past five-year period, from 94.24 percent in 1957 to 79.94 percent in 1961, as shown in table.

Percentage of United States Imports of Japanese Tuna Packed in Brine	
Year	Percentage of Imports from Japan
	%
1961	79.94
1960	83.35
1959	80.58
1958	89.01
1957	94.24

The United States does not apply quota restrictions on imports of tuna packed in oil but assessment of an import duty of 35 percent ad valorem virtually precludes the possibility of foreign countries exporting canned tuna in oil to the United States, reports the Japanese periodical. (*Nihon Suisan Shimbun*, October 8, 1962.)

CANNED TUNA INDUSTRY TRENDS, AUGUST 1962:

Although poor summer albacore tuna fishing has resulted in a light pack of white meat for export to the United States, good skipjack fishing has increased the ratio of the pack of light meat.

As of early August, a fairly large quantity of albacore tuna was expected to be canned since good albacore fishing was reported in

Japan (Contd.):

the Indian Ocean. At least 200,000 to 300,000 cases of white meat are expected to be packed from Indian Ocean albacore.

Assuming that about the same quantity will be packed from winter albacore, it may be possible that half of this year's production quota of 2.4 million cases will be white meat, including some 650,000 cases already sold. But the pack of light meat from now on depends largely on landings and ex-vessel prices of skipjack. Also, this year's skipjack are small, requiring more processing time. If Indian Ocean albacore can be bought for \$352 per metric ton, some packers may prefer to use albacore instead of restricting their pack to skipjack.

Some 330,000 cases (excluding the 8th sale) of white meat tuna were in stock at the sales company as of early August. It is expected that the 9th through the 11th sales can be adequately taken care of with the present white meat stocks. (Suisan Tsushin, August 6, 1962.)

CLAIMS MOUNT AGAINST JAPANESE FROZEN YELLOWFIN TUNA EXPORTS TO THE UNITED STATES:

A JETRO (Japan Export Trade Promotion Association) report reveals that claim problems against Japanese frozen yellowfin tuna exported to the United States are common occurrences now. A United States cannery which recently imported 70 tons of frozen yellowfin tuna from Japan reportedly claimed a price adjustment for approximately 20 percent of the shipment because of the dark color of the tuna meat, because the packer had to pack them as grated tuna.

A similar claim was made by another United States packer against Japanese frozen yellowfin tuna loins delivered in August 1962. The loins were generally inferior in color quality, except for a small percentage which retained the normal color of tuna loins. The packer reportedly demanded a \$40 per ton discount for the shipment, claiming that the dark meat tuna loins delivered would have to be packed as second grade tuna, and warned that all further contracts would be cancelled unless this condition was met.

In view of the problems that have arisen out of exports of inferior quality loins, Japan

must enforce a more rigid quality control and establish a quality grading system, reports the Japanese periodical Nippon Suisan Shim-bun, October 1, 1962.

SLUGGISH FROZEN TUNA MARKET CAUSES CONCERN:

The Japan Frozen Foods Exporters Association held a meeting of its Atlantic committee in mid-September 1962 to discuss the sluggishness of frozen tuna exports to the United States. No conclusion was reached at the meeting. Most of those present seemed to agree that the situation could be eased a little by concentrating their efforts on exporting to the European market. Market conditions in Europe for frozen tuna are considered more favorable than in the United States. Some expected a plan for each exporter to independently regulate exports to the United States, but it was unanimously agreed not to suggest a temporary withdrawal of offers.

The United States is the largest market for Japanese frozen tuna. Between April and July of 1962, more than 20,000 short tons were licensed for export to the United States. The price during that period reached \$375 per short ton f.o.b. Japan for yellowfin tuna weighing 20-80 pounds. By the end of July, however, the market became weak and as of mid-September no sales were reported completed. In many cases, offers were made at prices less than \$300 per ton f.o.b. Japan for yellowfin tuna.

Under the circumstances, the Export Frozen Tuna Fisheries Association and the Japan Frozen Foods Exporter Association were trying to find some means to cope with the sluggish tuna market.

Contracts were being concluded around future delivery orders, some of which were as late as for January 1963. The industry was trying to find some way of alleviating the situation. Some of the suggestions were: (a) land more of the catch in Japan by chartering carriers, (b) store catch in local cold-storage plants and wait for improvement of market conditions, and (c) concentrate on exports to Europe. Demand in Japan was still strong and the ex-vessel price was high compared with the sluggishness of the export market. Exports to Europe were still reported at \$400 c.i.f. a long ton on yellowfin tuna. The industry was of the opinion that exports to Europe may be continued at a high level even

Japan (Contd.):

though exports to the United States have dropped off because at the time there was still a shortage of raw tuna in Europe. (Suisan Keizai Shimbun, September 18, 1962.)

SECOND JAPAN-UNITED STATES TUNA MEETING AS REPORTED BY JAPANESE:

The second Japan-United States tuna conference convened on October 9, 1962, in the conference room of the Japanese Foreign Ministry. The meeting opened with a speech of welcome by the Japanese Ambassador Yagi to Iraq, representing Japan, followed by addresses delivered by the United States Delegate, Assistant Secretary of the Interior for Fish and Wildlife Briggs, and Japanese Minister of Agriculture and Forestry Shigemasa. Delegates of the United States and Japan were then introduced, and the Japanese senior delegate, Yagi, was elected chairman of the meeting. Gist of the speeches delivered by the three delegates is as follows:

Yagi: "The tuna fishery occupies a particularly important place in the fishing industry. Japan presently exports much of her frozen tuna and canned tuna to the United States. It is my sincere desire that this second tuna meeting between the two closely interrelated countries of the United States and Japan will, through frank discussions of tuna problems and exchange of information and data on tuna, contribute to the enhancement of friendly, cooperative relationships that were established at the first tuna meeting held between the two countries."

Briggs: "This meeting is the outcome of the talk held in May this year between Secretary of the Interior Udall and former Agriculture and Forestry Minister Kono, during which an agreement was reached that, 'Friends should have a heart-to-heart talk on problems of common interest.' To the extent permitted, we would like to discuss marketing, processing, and resources, through which we hope to develop more effectively the friendly relations now existing between our two countries. At the same time, we wish to exchange views on the size of tuna resources and on the tuna industry problems confronting our two countries. Viewed from the present state of marketing and of sharing the market, this tuna meeting has an important significance for two reasons: (1) both Japan and the United States have a high tuna production capacity, (2) both nations must develop effective means by which to maintain quality, expand market, and conserve resources. Our two countries together produce approximately 80 percent of the total world tuna production. Exchange of views would be a most effective way to develop the tuna industry of our two countries. We expect this second tuna meeting to result in a free and timely exchange of tuna information and we hope for continued frank exchange of information."

Shigemasa: "In the first tuna meeting, information on tuna resources, tuna fishery, utilization, and processing was exchanged, and a deeper understanding was also gained on marketing problems. We hope that this second meeting will be a similar gathering for exchange of research data and discussions of trends and problems of fishery, marketing, and trade. In view of the high production of the tuna fishery, the Japanese Government will take measures to ensure effective and continued utilization of the tuna resources. It is particularly desirable that both Japan and the United States continue to cooperate closely hereafter in order to acquire a more accurate knowledge of tuna resources of the Pacific Ocean, which is a matter of common concern of both of our countries. We hope that, through frank exchange of views on market and on measures to be adopted for the promotion of tuna demand, the tuna trade between Japan and the United States will develop into a healthy, fair, and smooth commerce between our two countries." (Shin Suisan Shimbun Sokuho and Suisan Tsushin, October 10, 1962.)

REGULATIONS ON LANDING AND TRANSFER OF TUNA CATCHES RELAXED BY JAPANESE GOVERNMENT:

The Japanese Fisheries Agency announced on September 6, 1962, the revision of the regulations governing the operation of medium and distant-water tuna vessels and portable-vessel-carrying tuna motherships, as follows:

A. Permit to Operate in Atlantic Ocean:

Medium tuna vessels (40-100 tons gross) shall henceforth not be required to submit notification of intent to operate in the Atlantic Ocean. Portable-vessel-carrying tuna motherships will be permitted to operate in the Atlantic Ocean even if they do not intend to export their catches or their processed products.

B. Permit to Transfer Catches at Sea in Atlantic Ocean:

Licensed medium-tuna vessels and distant-water tuna vessels (over 100 tons gross) shall be permitted to transfer mutually between them their catches at sea, provided that on each occasion they obtain prior approval to do so.

C. Permit to Ship Catches to Japan Proper:

Medium and distant-water tuna vessels, as well as portable-vessel-carrying motherships, are authorized to land or transfer their catches at foreign ports for shipment back to Japan in the following cases, provided that, in each of the cases they obtain prior approval for each landing or transfer.

1. When the landing or transfer of Atlantic Ocean-caught fish is made at ports bordering the Atlantic Ocean.
2. When the transfer of Indian Ocean-caught fish is made at Singapore or when the landing or transfer of Indian Ocean-caught fish is made at Penang.
3. When the landing or transfer of Pacific Ocean-caught fish is made at bases in the Pacific Ocean, where vessels operate under long-term contract.
4. When the landing or transfer of Pacific Ocean-caught fish is made at ports bordering the Pacific Ocean. However, in that case, those ports may be designated in advance.

D. Landing or Transfer of Catches for Export Purposes:

Medium and distant-water tuna vessels, as well as portable-vessel-carrying motherships, are authorized to land or transfer their catches at foreign ports for export purposes in the following cases, provided that, in each case, they obtain prior approval for each landing or transfer.

1. When the landing or transfer of Atlantic Ocean-caught fish is made at ports bordering the Atlantic Ocean. However, the quantity may be stipulated.
2. When the landing or transfer of Indian Ocean-caught fish is made at Penang, or when the transfer of Indian Ocean-caught fish (frozen) is made at Singapore. However, the quantity may be stipulated.

E. Landing and Transfer of Catches Under Long-Term Contract:

Tuna vessels under long-term (overseas) contracts may land their catches at foreign ports as follows:

1. Medium and distant-water tuna vessels, as well as portable-vessel-carrying motherships, which operate in the Atlantic Ocean, may land their catches at ports bordering the Atlantic Ocean for export to countries where tuna exports to those countries are not regulated by the Japan Export Frozen Tuna Producers Association.
2. Medium and distant-water tuna vessels may land catches taken from the Pacific and Indian Oceans in

Japan (Contd.):

countries bordering those oceans if the catches are to be consumed within those countries.

3. Fishing vessels operating under long-term contracts may land their catches at foreign ports, provided their plans for landing, selling (including exporting), and shipping the catch back to Japan have been originally approved by the Minister of Agriculture and Forestry. (*Suisan Keizai Shimbun*, *Suisan Tsushin*, Japanese Periodicals, September 6, 1962.)

FROZEN TUNA EXPORTS TO EUROPE AND AFRICA, APRIL-JULY 1962:

The licensed quantity of Japanese frozen tuna exports to Europe and Africa, April through July 1962, amounted to 13,384 long tons, according to Japan Frozen Foods Exporters Association. Half of the quantity (somewhat more than 9,000 tons) was for Italy. Future expansion of exports is anticipated.

Licensed quantities of Japanese frozen tuna exports to Europe and Africa by country April-July 1962 were (in long tons): Italy 9,344, Yugoslavia 3,033, France 418, Ghana 392, Czechoslovakia 192, Australia 5; a grand total of 13,384. (*Suisan Keizai Shimbun*, August 25, 1962.)

DIRECT FROZEN TUNA EXPORTS FROM ATLANTIC TUNA VESSELS TO EUROPEAN AND AFRICAN COUNTRIES, 1961:

Japan's Atlantic tuna fleet directly exported more tuna to European and African countries in 1961 than in 1960. The increase amounted to 6.8 percent in quantity and 15.7

Direct Japanese Frozen Tuna Exports from Atlantic Tuna Vessels to European and African Countries, January-December 1961

Destination	Quantity	Value
	Metric Tons	US\$1,000
Italy	28,956	7,308
Yugoslavia	10,503	2,901
Tunisia	668	180
Libya	435	110
Spain	770	158
Czechoslovakia	1,957	462
Guinea and Ghana	212	30
Total, Jan.-Dec. 1961	43,501	11,149
Total, Jan.-Dec. 1960	40,746	9,640

percent in value. Italy was the leading buyer of direct Japanese tuna exports from the Atlantic in 1961 with 66.6 percent of the total quantity.

ONE DISTRICT TO EXPAND SKIPJACK TUNA FISHERY:

The Hokkaido Fisheries Society directors met early in August and decided to establish the Hokkaido Public Corporation to expand the skipjack tuna fishery. A total of US\$166,667 (\$83,333 from the Hokkaido Government and the same amount from the fisheries cooperatives) will be invested for the purpose of converting trout, herring, sardine, and other sluggish coastal fisheries, principally in the Japan Sea, to skipjack tuna fishing in order to stabilize their fishing operations. (Japanese periodical, August 7, 1962.)

TUNA LANDINGS BY SPECIES, 1955-61:

Direct landings of skipjack, bluefin, albacore, big-eyed and yellowfin tuna in Japan in 1961 amounted to 438,889 metric tons, up 23.3 percent from the 355,925 tons in 1960, and up 7.8 percent from the 407,271 tons in 1959. The total landings of those tuna species in 1961 were larger than in 1960 because of heavier landings of big-eyed tuna (up 47.7 percent),

Landings in Japan of Certain Tuna Species, 1955-61					
Year	Skipjack	Bluefin	Albacore	Big-eyed	Yellowfin
	(Metric Tons)				
1961	144,192	68,282	44,151	99,166	83,098
1960	78,546	64,449	60,721	67,124	85,085
1959	166,628	44,202	46,971	70,604	78,866
1958	147,388	21,092	46,327	70,046	76,735
1957	97,418	34,166	68,111	57,495	75,613
1956	97,976	36,919	58,654	47,074	76,875
1955	99,626	23,081	40,560	40,759	62,280

Note: Does not include direct Japanese tuna landings in foreign countries.

skipjack (up 83.6 percent), and bluefin (up 5.9 percent). The increases were partly offset by declines in the catch of albacore (down 37.5 percent) and yellowfin (down 2.3 percent). These statistics were compiled by the Japanese Government, according to the Japanese periodical *Suisan Tsushin*, August 7, 1962.)

TUNA FISHING FORECAST FOR PACIFIC OCEAN, SEPTEMBER 1962:

The Kanagawa Prefecture Fisheries Experimental Station late in August 1962 released its forecast of Pacific Ocean tuna fishing in September 1962.

Central Pacific (20° N. latitude-10° S. latitude, east of 150° W. longitude): In the sea area from the Equator to 10° N. latitude, big-eyed catch was expected to be high all over the area with the exception of waters around the equator and 120° W. longitude. Because the catch in the area has been decreasing yearly since 1960, there was a probability that it would be less than last year. In the sea area between 5°-10° N. latitude, a comparatively large catch of black marlin was expected.

Japan (Contd.):

South of the Equator, roughly 4°-10° S. latitude, good catches of big-eyed tuna were expected, but the catches would be less in the area around and west of the Marquesas Islands.

East of 130° W. longitude, considerable yellowfin catches were anticipated mixed with other species.

The expected catch rate per 1,800 hooks was: 2.9 metric tons (0.8 ton of yellowfin, 1.6 tons of big-eyed, and 0.5 ton of black marlin) in the northeast sea area of the Fanning Islands; east of Christmas Island, a total of 3.1 tons (2.2 tons of big-eyed and 0.9 ton of black marlin); a total of 4.3 tons (1.6 tons of yellowfin, 2.2 tons of big-eyed, and 0.5 ton of black marlin) around 7° N. latitude, 125° W. longitude; a total of 5.7 tons (1.1 tons of yellowfin and 4.6 tons of big-eyed) around 5° N. latitude, 105° W. longitude; south of the Equator, a total of 2.9 tons (1.5 tons of yellowfin, 1.4 tons of big-eyed); in the northeastern area of the Marquesas Islands, a total of 3.7 tons (1.4 tons of yellowfin, 2.3 tons of big-eyed); in the sea area 4°-10° S. latitude, 120°-130° W. longitude, a total of 4.3 tons (2.0 tons of yellowfin, 2.3 tons of big-eyed).

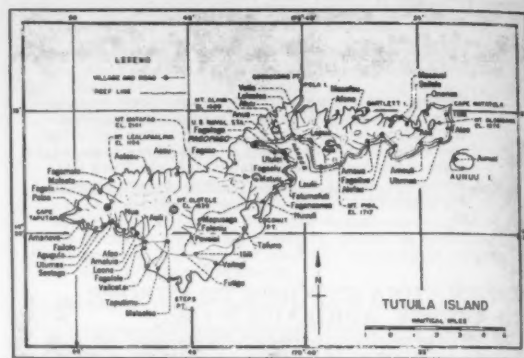
Southeastern Pacific (south of 10° S. latitude, east of 150° W. longitude): Some albacore were expected to be caught east and southeast of the Pomotu Islands. The catch in the northern area of 20° S. latitude and south was expected to be somewhat different—a catch rate of 3.2 tons (1.2 tons of yellowfin, 0.6 ton of big-eyed, 0.8 ton of albacore, and 0.6 ton of striped marlin) was expected in the northern portion of the area while in the southern portion the catch rate was expected to be 3.5 tons (1.2 tons of yellowfin, 0.6 ton of big-eyed, 1.1 tons of albacore, and 0.6 ton of striped marlin).

Northern central and Northeastern Pacific (north of 20° N. latitude, east of 170° E. longitude): Big-eyed fishing was expected to continue poor around 30° N. latitude, but catches were expected to increase in the entire area and schools were expected to appear early in September. Catch was expected to be all big-eyed with a rate of 3.0 tons around Midway and 0.5 ton north of the Hawaiian Islands, 1.5 tons east of 150° W. longitude. Also, in the northern sea area of Ocean Island, albacore was expected to be caught with big-eyed when they began to appear in September with a catch rate of 0.76 ton (0.25 ton big-eyed and 0.51 ton albacore).

Central Pacific (20° N. latitude-10° S. latitude, 150° W. longitude-170° E. longitude): A poor fishing period was expected to prevail for big-eyed in the area 5°-13° N. latitude and also 5° N. latitude-5° S. latitude. In the sea area, from Jaluit Island and the Gilbert Islands to the north of the Fanning Islands, black marlin was expected to be caught mixed with other species and some albacore was expected in the area from the Ellice Islands to the Tokelau Islands. (Japanese periodical, August 29, 1962.)

ANOTHER FIRM TO START AMERICAN SAMOAN FISHING OPERATIONS IN JANUARY 1963:

Another Japanese fishing company, which earlier in 1962 received a tuna catch quota of 6,000 metric tons for its American Samoan base, plans to commence fishing operations out of Samoa in January 1963 with 22-23 fishing vessels. Of that fleet, one 85-ton vessel (Heian Maru No. 2) had already departed Japan for Samoa, ten 99-ton vessels are under construction for delivery in 1962, and the remaining 12 will be contracted with vessel owners in Japan.



Tutuila, main island of the Territory of American Samoa.

Reportedly, all catches landed by the Japanese firm's fishing vessels will be sold to the United States cannery in Samoa through two Japanese export firms: one will handle 2,000 metric tons of the catch and the second will handle 4,000 metric tons. (Shin Suisan Shim-bun Sokuho, October 3, 1962.)

Note: See Commercial Fisheries Review, July 1962 p. 77.

TUNA VESSEL DEMONSTRATES EFFICIENCY OF POWER BLOCK:

A large Japanese company's surrounding-net (purse-seine) vessel Kenyo Maru (240 gross tons), which tested a United States power block, completed its second trip and returned in September 1962 to the fishing port of Shiogama in northeastern Japan with close to 25.3 short tons of skipjack tuna. The skipper commented as follows concerning the efficiency of the power block.

"The power block is a simple device and yet produces no slippage. It easily lifts the net from the water and can be adequately handled by the 18 persons we employed in the recent trial operations. Perhaps it can even be handled by 14 persons, with two men handling the float line, two on the lead line, and the remainder working the body of the net. Without the power block, a vessel of this size would have required 27 men, including the skiff men.

"The net-lift ability of the power block is indeed amazing. We pursed the surrounding net by hand, but this should be done by hydraulic winch and the net should also be made of heavier twine.

"The power block weighs 616 pounds, so it would be difficult to mount this unit on top-

Japan (Contd.):

heavy vessels, such as the 85-ton two-boat surrounding net vessels. There is need to devise ways of using the power block even at lower positions. We tried this, but on the Kenyo Maru it would cause the power block to protrude beyond the stern.

"At full speed, the power block can lift the entire net in 20 minutes, and at slow speed in 100-110 minutes.

"After gaining more experience, we should be able to operate this unit more efficiently in offshore waters, as well as in coastal waters. In the southwest Pacific Ocean, however, the operating method would have to be improved due to different oceanic conditions." (Suisan Keizai Shimbun, Japanese periodical Sept. 12, 1962.)

Note: See Commercial Fisheries Review, September 1962 p. 89.

* * * * *

TUNA INDUSTRY TRENDS:

The Japanese report that demand for tuna is expanding yearly; and the Japanese export of tuna products is going on smoothly. But the continued shortage of raw tuna is threatening to curtail Japanese production of tuna products. The Japanese tuna packers association has formed a committee to study the problem of the raw material shortage in Japan.

According to Japanese Government catch statistics for 1961, the total Japanese tuna catch amounted to some 650,000 metric tons. Complete data on how the catch was used is not available, but 150,000 tons were exported as frozen tuna. Also, some 20,000 tons of fresh tuna were exported from overseas bases. The remaining 480,000 tons were used or processed in Japan, roughly for canning, sausage manufacturing, and consumption as fresh fish.

Taking 1961, for example, the exports of canned tuna totaled some 4 million cases, so tuna used for canning can be estimated at 80,000-100,000 tons. Because of the fact that more fishing is done in distant waters--the Atlantic, Indian Ocean, and Eastern Pacific--landings in Japan are not increasing so as to keep up with the demand for raw fish.

Under the circumstances, ex-vessel prices for raw tuna in Japan have advanced considerably and the available supplies are

not adequate to meet fully the demand. In August ex-vessel prices dropped somewhat, with the price of yellowfin at US\$314-\$319 per metric ton. At this price, packers of canned tuna are breaking about even.

The study by the tuna canners association to find means to alleviate the shortage of raw tuna in Japan has not come up with any solution to date. One thing that is recognized is the need to find some way to encourage or increase landings in Japan. There is no agreement as to whether this should be accomplished by requiring the landing in Japanese ports of pelagic tuna vessels or by increasing the number of 39-ton tuna vessels fishing in-shore waters. (Suisan Keizai Shimbun, August 24, 1962.)

* * * * *

VIEWS ON NORTH PACIFIC HALIBUT RESEARCH:

Editor's Note: The following article on halibut research appeared in the Japanese fisheries periodical Suisan Keizai Shimbun, published in Tokyo, as part of a series of articles on Tripartite Fisheries Treaty problems.

It is widely known that the halibut resource and halibut fishery off the North American Continent (from northern California to the Bering Sea) have been successfully regulated internationally on the basis of research conducted by scientists and that, at the same time the Japan-United States-Canada Fisheries Treaty was concluded, Burkenroad's¹ critical views on the fluctuation of the Pacific halibut had already been published, but apparently, there was no objection to placing halibut on the abstention list.

In 1956, the United States and Canada, in accordance with the provisions of the Treaty, submitted reports to the International North Pacific Fisheries Commission, in which they stated that their halibut stocks continued to qualify for abstention. These reports were submitted together with the reports of the International Pacific Halibut Commission and a few other publications. The arguments presented by the United States and Canada and subsequent discussions on their views which developed are summarized as follows:

The United States report began by stating that the existing designation of regulatory

¹Burkenroad, M. D., 1948, "Fluctuations in Abundance of Pacific Halibut," Bingham Oceanographic Collection Bulletin, vol. 11, pp. 81-129, New Haven, Conn.

Japan (Contd.):

areas was proper, based on such studies as tagging experiments, and it then proceeded to support this assertion by presenting an analysis of historical developments on the basis of statistical data on catch and catch effort, with respect to halibut stocks in Area 2 and Area 3. The report contains the following summarization:

"Increased fishing intensity since 1910 did not provide an increase in sustained productivity of halibut. Evidence of this fact had already been obtained prior to the institution in 1930 of the first international regulation on fishing intensity. Subsequent studies resulted in similar findings."

To present this matter a little more in detail, the United States claimed that, prior to 1930, an increase in catch effort was accompanied by a temporary increase in yield, but significantly, subsequent to 1930, the fishery was characterized by a progressive decline in catches to levels below earlier catches. Since the Thompson-Bell model closely coincided with these changes, the mechanism hypothesized in the model did actually work. In other words, the United States maintained that this distinctive phenomenon was created by a change in catch effort, and that the current success, which had been expected from the law of population dynamics, was achieved not by increasing catch effort but by reducing effort after 1930.

Against these assertions, Japan pointed out that: (1) the Thompson-Bell model is based on factors other than catch effort, such as increment, growth, natural mortality rate and gear efficiency, which should be considered as variables; thus, theoretically, these factors provide no proof that the mechanism functions; (2) in applying the theories contained in the United States report, the results to date do not support the American assertions that, as the halibut resource has recovered and increased, the amount of annual-ly exploitable increment has increased.

With regard to factors other than effort, Japan pointed out that the study of stock fluctuations has shown that natural changes, particularly changes in increment, have contributed to past developments to a greater extent than catch effort. Thus, Japan maintained that the United States did not present sufficient evidence that her halibut stocks fulfilled the abstention requirements.

In 1959, the United States and Canada submitted reports containing statistical compilations on sustainable catch based on increment. In calculating these figures, the United States and Canada first of all attempted to estimate the natural mortality rate, growth rate, and fishing mortality rate on the basis of existing data. They then used these estimated values to conduct a series of calculations to arrive at the sustainable catch quantity based on increment. Based on these results, they claimed that their present halibut stocks have approached the level of maximum sustainable productivity.

The theory of sustained yield based on increment is based on the premise that the annual increment can be determined without regard to abundance (strictly speaking, the quantity of parent fish), and that the year-class group of the increment provides a preliminary standard on the catch rate that would yield maximum catch. Calculations based on this standard show a particularly high catch rate for Area 3, but the present catch rates in all fishing areas are too low. The United States and Canada claim that the differences in catch rates are negligible and maintain that their halibut stocks fulfill the requirements for abstention.

However, the biggest question is that this theory and the resultant calculations cannot by themselves explain the historical developments, which are complex phenomena, that have occurred since 1930. If the annual increment is determined to be entirely unrelated to abundance and is considered to be a problem related to catch rates only, then the problem of regulating the halibut fishery is an economic problem, which can be solved by permitting either a fewer number of efficient fishing vessels or a larger number of less efficient vessels to engage in this fishery. (*Suisan Keizai Shimbun*, August 30, 1962.)

Calculations made by the United States and Canada suggest a significant increase in increment since 1930, and their figures primarily reflect the annual increase in stock that can be utilized. Their (original) theory of halibut fishery management was to increase abundance so as to raise to a maximum the yearly increase in the stocks that can be utilized.

It is true that their halibut stocks have increased in abundance, but the United States and Canada have not explained as to what

Japan (Contd.):

level their resources will be considered to have reached a maximum, nor have they presented any evidence to support their claims that their stocks have now reached that level of abundance.

Reports so far submitted by the United States and Canada on the relationship between abundance and increment have merely stated the basic presumption that "increment reaches a maximum when abundance is at a certain level," and they have not yet presented any evidence to prove their assertions. Concerning this matter, the United States and Canada are said to be preparing new reports but, judging from the data that have been submitted, it may be difficult for those countries to provide any supporting evidence that will be acceptable.

The reason for this is that long-term fluctuations in the resource must be analyzed from a biological standpoint but, regrettably, contrary to expectations, biological data are somewhat meager. Most of the knowledge currently available concerning the ecology of halibut were obtained through investigations conducted before 1930. The inadequacies of the biological analyses performed on the data, which are based on the arbitrarily adopted and arbitrarily applied Thompson-Bell model, are glaringly apparent. In other words, the unbalanced selection of fishing grounds and the changes (fluctuations) accompanying these selections have created an ever increasing complex phenomena.

The reports submitted by the United States and Canada treat the Bering Sea halibut very briefly as a stock found in the fringes of Area 3. This was arrived at on the basis of early tagging experiments and, above all, on the basis of the smallness of the commercial halibut fishery in the Bering Sea.

In 1958, the United States and Canada submitted reports based on investigations conducted until 1956, and in those reports they insisted that the Bering Sea halibut were part of the halibut stocks in Area 3 and, at the same time, pointed out the necessity of conducting further studies on the Bering Sea halibut.

In 1959, the United States and Canada submitted papers on "Sustainable Catch Based on Increment," in which they mentioned that

the Bering Sea halibut (1956), as a virtually unutilized stock, were being used for the purpose of estimating the natural mortality rate of halibut.

At the annual meetings held in 1960 and 1961, Japan sought an explanation of the discrepancies and questionable points noted in the various reports presented earlier by the United States and Canada. For example, the expression "Bering Sea halibut" is used frequently in the report submitted by the United States and Canada, as well as those submitted by the Halibut Commission, but in many cases the statements were too brief to clarify the actual state of this stock. Moreover, the regulatory areas, Area 4, Area 3A and Area 3B, have been reorganized and this has served to further complicate matters.

However, the following two findings are important biologically. One is that a comparison of the average body weight by age group of halibut taken in the fishing grounds extending from Cape Spencer to the Bering Sea showed marked differences in values within the wide age group of halibut taken in the Bering Sea from those taken in the waters east of the Shumagin Islands in Area 3. The other is that the average body size by age group of halibut taken in the fishing grounds within Area 3 east of the Shumagin Islands showed practically no differences in value.

Halibut are known to migrate extensively as they mature. If they are to be identified as a single stock due to their migration and intermingling, then there should be a more uniform average body weight by age group.

Tag recoveries show that the fishing effort in the Bering Sea west of the Trinity Islands in Area 3 was indeed low. In view of this situation, it may be necessary to make a more thorough adjustment in determining the dividing line between the stock in the eastern part of Area 3 and the stock in the western extremity of that area. There is no denying the fact that this matter is not as simple as the United States and Canada claim it to be.

The present voluntary abstention conditions seem to have been established on the basis of experiences gained from the regulation of the halibut fishery. Superficial observations of the changes that have occurred in catch quantities and catch effort during the 50 years since 1910 seem to indicate that the halibut fishery literally satisfies the abstention conditions stipulated in the Tripartite Fisheries

Japan (Contd.):

Treaty. However, the study and analysis of historical developments from the biological standpoint reveal the existence of problems (assumptions) which have not been substantiated and which, at the present time, may be practically impossible to prove.

The abstention conditions, which seek to establish a sustainable yield, involve the problem of regulating fishing intensity and the problem of determining the necessity of regulating effort. However, these two problems concern matters related to resources, abundance, and economics. From a commercial standpoint, the greater the abundance, the less effort will be required to produce the necessary catch. In this sense, the regulation of the halibut fishery has actually produced the desired results. However, there is no clear scientific evidence to support the assertions that this regulation will ultimately increase abundance or that it will show such prospects. (Suisan Keizai Shimbun, August 31, 1962.)

FROZEN SWORDFISH EXPORTS TO UNITED STATES:

Frozen swordfish exported to the United States from April 1, 1962 (beginning date of Japanese fiscal year) to October 1, 1962, totaled 3,036 short tons. This is according to data compiled by the Japan Frozen Foods Exporters Association. Exports during the same period the previous year were 2,750 short tons.



Hauling in a swordfish aboard a Japanese catcher vessel.

Sales of swordfish in the United States were reported good during 1962. Wholesalers' inventories at New York City and Boston as of September 6, 1962, were reported slightly lower than at the same time a year earlier. (Shin Suisan Shimbun Sokuho, October 3, 1962.)

FROZEN OCTOPUS EXPORTS TO U. S. AND CANADA:

Japanese exports of frozen octopus to the United States and Canada have been favorable this season. Nearly 1,700 short tons were shipped during the season (February-July), almost twice as much as last season. Also, the price has been about 23 cents a pound c.&f., an increase of 20 percent from last season.

Frozen octopus is used as bait for halibut fishing in Canada and Alaska. (Suisan Tsushin, August 6, 1962.)

FISH MEAL FACTORYSHIP TO OPERATE OFF ANGOLA:

The Japanese fish meal factoryship Renshin Maru (14,094 gross tons) was expected to return to Japan from the eastern Bering Sea bottom fishing grounds on or about October 10, 1962. Upon its return, the factoryship was to be refitted and dispatched around November 1 to Angolan waters, where it will process fish (delivered by Angolan fishing vessels) into fish meal on a contract basis, like it did in 1961. (Suisan Tsushin, Japanese periodical, September 22, 1962.)

TRANSISTORIZED DEPTH-FINDER DEVELOPED BY JAPANESE FIRM:

Six flashlight dry batteries or a storage battery will operate a new Japanese transistorized depth-finder. The manufacturer claims the new depth-finder (with a total weight of only six pounds) will measure depths up to 120 feet with a margin of error of less than 2 percent. The manufacturer also states that the instrument may locate schools of fish. It is priced at 28,000 yen (US\$77.77) f.o.b. Japan.

The transistorized depth-finder consists of an indicator 6 inches in diameter and $7\frac{1}{2}$ inches long, plus a separate transducer $1\frac{1}{4}$ inches in diameter and $4\frac{3}{4}$ inches long. Sound-

Japan (Contd.):

ings are taken at the rate of 1,200 per minute. Neon flashes on the dial of the indicator show the depth of water. Intermittent neon flashes on the dial show a school of fish.



The transducer is designed to be attached to the bottom of a boat. But it may be attached to the side of a boat by the use of a vinyl tube and C-clamp. The C-clamp for use with the depth-finder is an extra cost item that will be supplied by the manufacturer upon request. The transducer should be submerged at least 10 inches in the water and placed so that it will be vertical to the sea surface when the boat is running. (Fisheries Attache, United States Embassy, Tokyo, September 19, 1962.)

* * * * *

STERN TRAWLER LAUNCHED:

The large stern trawler Taiyo Maru No. 73 (1,500 gross tons), ordered by a large Japanese fishing company, was launched in Shimonoseki, Japan, in September 1962. The vessel is equipped with the most modern electronic equipment, such as fish-finder, radar, and loran. Delivery was expected to be made around the end of November 1962.

Specifications of the vessel are: Length, 227.7 feet; beam, 38.9 feet; draft, 18.8 feet; power plant, 2,000 hp. Diesel engine; speed, 14 knots. (Minato Shimbun, September 29, 1962.)

* * * * *

CONSIDERS RUSSIAN TRAWL FISHING METHODS IN GULF OF ALASKA OUTDATED:

The Japanese Fisheries Agency and the Japanese fishing industry reportedly consider the trawl fishing methods employed by the Soviet Union in the Gulf of Alaska as being very crude and far inferior to the methods presently employed by the Japanese trawl fleet.

Information concerning the Russian trawl gear was supplied to the Japanese Fisheries Agency by the U. S. Department of State following the interim meeting of the International North Pacific Fisheries Commission held at Honolulu in August 1962. At this meeting, the United States delegation made reference to the Soviet trawl gear, which was reported to be constructed and operated in such a way that it did not take halibut. Japan requested that she be provided with data concerning the Russian trawl.

The data supplied by the United States indicated that the Russians used 40-pound sinkers attached to 12 drop lines, which are fixed to the bottom entrance of the trawl. The 12 sinkers serve to keep the trawl near the bottom but at predetermined heights off the bottom, depending on the length of the drop lines. Reportedly, the Japanese consider the use of sinkers to hold down a trawl near the bottom an outdated technique. (Shin Suisan Shimbun Sokuho, September 21, 1962.)

* * * * *

MORE JAPANESE VIEWS ON SECOND UNITED STATES-JAPAN TUNA MEETING:

The second Japan-United States tuna meeting convened in Tokyo on October 9, 1962. The editorial column of the Japanese fisheries periodical Suisan Keizai Shimbun, of October 11, 1962, in part, had this to say about the meeting:

The Japanese tuna industry awaits the outcome of the second tuna meeting with great expectations. The Japanese delegates have generally agreed to develop the following four points during the meeting: First, Japan will actively cooperate in international investigations of tuna resources in the Indian and North Pacific Oceans. Second, Japan will seek participation in the Inter-American Tropical Tuna Commission since she naturally should take part in the yellowfin tuna regulatory program in the eastern Pacific Ocean. Third, Japan will seek clarification of the canned tuna market situation in the United States, where a supply shortage estimated at 150,000 cases reportedly exists despite restrictions applied on canned tuna imports by the United States by means of tariff quota. Fourth, Japan will observe the attitude of the United States and will strive to bring about a better understanding among the Americans of Japan's desires and intention.

Japan and the United States must understand each other's position with respect to tuna trade, says the periodical. Unnecessary trade restrictions can be removed and Japan can supply the deficiency. It is hoped that the development of Japan's fishing industry and tuna export trade will result in further promoting friendly trade relations between Japan and the United States.

Japan (Contd.):

Japan, which is now virtually the world's leading supplier of tuna, must participate in the joint investigation of resources with dignity, confidence, and firmness of purpose.

The Japanese periodical *Suisan Taushin* of October 13 and 15, 1962, reported in part:

The tuna conference was primarily an exchange of views by both countries on known problems related to tuna fisheries, with no particularly new topic being introduced for discussion. During the subcommittee meetings held on October 10 and 11, fairly pointed views were exchanged between the delegations of both countries in regard to investigation of resources and trade problems. Reportedly, Japan presented more data on resources than did the United States, but the United States delegation is reported to have stated that "Various countries are conducting investigations of resources in the Atlantic Ocean, so Japan should also cooperate in those investigations rather than just take fish. Catch data alone cannot be considered investigations." Japan stated that she would hereafter prepare catch data covering smaller areas. Regarding trade problems, the United States delegation stated that Japan has considerably expanded her trade, due to the rapid increase in tuna catches taken by her fishermen. In reply, the Japanese remarked, "United States packers have established canneries in South America with American capital for production of tuna packed in brine, and they are importing the South American production into the United States under the tariff quota which permits imports of tuna packed in brine up to an amount corresponding to 20 percent of total United States canned tuna production for the previous year. Imports of tuna packed by United States-managed plants should be excluded from this tariff quota."

Both Japan and the United States agreed that this meeting was beneficial to the two countries. Summarized below are the subcommittee meetings held on October 10 and 11.

1. The meeting of Subcommittee I focused attention on the problem of conserving the tuna resources. Reports on investigations of resources conducted by both Japan and the United States were presented by the delegates of the two countries. The United States delegation presented various data on which the United States based her yellowfin tuna catch regulation to be enforced in the eastern Pacific Ocean. In connection with the yellowfin tuna regulatory problem, the Japanese delegation reported that the tuna vessels of Japan were instructed to submit catch data to the Government and that, Japan, although she is still studying measures to be applied after the yellowfin catch quota is filled, intends to render all possible cooperation to the United States Government in regulating yellowfin tuna catches. The United States delegation expressed its desire of extending the present eastern Pacific Ocean tuna investigation program to the waters of the South Pacific Ocean, the Indian Ocean, and the Atlantic Ocean.

2. The meeting of Subcommittee II primarily dwelled on the theme of expanding the utilization of tuna products and of expanding the tuna trade. Concerning United States imports of canned tuna, the Japanese delegation reportedly presented the following inquiries: (a) Is it not unreasonable for the United States to exclude the Samoan production in the total United States canned tuna production, which forms the basis in computing the United States tariff quota on imports of canned tuna in brine? (b) Why does the United States impose such a prohibitive tariff of 35 percent on her imports of tuna packed in oil?

To these questions, the United States delegation is reported to have replied substantially as follows: (a) The U.S. Tariff Act specifically states that Samoa, Wake Island, Midway Island, and three other United States territories are not considered a part of the United States mainland; (b) at the price which Japan exports canned tuna in oil to European countries, she should be able to sell tuna packed in oil to the United States even if a 35-percent tariff is imposed. (*Suisan Taushin*, October 13 and 15, 1962.)



Kuwait

SHRIMP PRODUCING POTENTIAL SURVEYED BY UNITED STATES FIRM:

The Saudi Fishing Company, Ltd., in January 1962, observed its tenth year as exclusive concession holder for fishing in all Saudi Arabian waters of the Persian Gulf. Its first attempt at establishing a coordinated fishing industry in the Red Sea area failed. But it has granted a subconcession to an enterprising frozen foods distributor in the Eastern Province who negotiated and signed contracts with a United States firm for surveys of the Persian (Arabian) Gulf. Two trawlers owned by the United States firm were en route from Pakistan the latter part of this past summer to conduct a shrimp survey in Persian Gulf waters off the Eastern Province of Kuwait.

The frozen foods facility at Dammam in the Eastern Province is managed by a United States national who estimated the chances for success resulting from the new joint venture as very high. Several approaches toward contract negotiations for a joint venture had been made earlier this year by other United States firms.

The frozen foods distributor at Dammam has already installed a small pilot shrimp freezing plant which is to be used in the survey. The plant will be expanded if shrimp are found in quantity. No financial details of the subconcession were given, but the terms were believed to be attractive to the concessionaire.

Shrimp fishing has been successful in Kuwait. For this reason, the joint venture is regarded as a logical alliance between an experienced United States firm and an established Saudi freezer plant operator. (United States Embassy, Kuwait, September 1, 1962.)



Mexico

WEST COAST 1962/63 SHRIMP FISHING SEASON DELAYED BY VESSEL TIE-UP:

The new shrimp fishing season on Mexico's west coast did not start on September 15, 1962, as originally scheduled, due to a vessel tie-up over contract negotiations. Fishing vessels were all set to start on that date, but at the last minute, boat owners and the cooperatives (who have exclusive rights to the catching of shrimp in Mexico) failed to agree on a new contract. This resulted in some 200 vessels being tied up. The loss to the shrimp industry because of the tie-up was estimated at 6 million pesos (US\$480,000) a day, and affected Mexico's Pacific Coast shrimp fishery from Salina Cruz to Puerto Penasco.

Mexico (Contd.):

As of September 26, 1962, the major dispute between the boat owners and the cooperative fishermen appeared to be on the 45 percent share demanded by the cooperatives. Although Mexican west coast shrimp vessels were then fishing, the tentative agreement reached on September 22 was not final, and it was feared that fishing again would stop. The cooperatives want 45 percent of the entire catch; the boat owners are willing to give only 45 percent of the net sales return above a cost figure of about \$1,400 a metric ton for Guaymas, and about \$1,440 for Mazatlan. For example, if a metric ton of shrimp from Guaymas netted \$1,700 on the United States market, the cooperative would get \$135, or 45 percent of the difference between \$1,700 and \$1,400.

In addition, it was reported that the boat owners were willing to pay the fishermen a flat \$360 a metric ton for heads-off shrimp, and to pay all boat operation costs including food. But agreement on that point had not been reached. Reports were that the fishermen wanted a premium price when shrimp landings exceeded a specific quantity.

The last contract agreed on by the cooperatives and boat owners expired August 31, 1962, and the dispute which was still in force later in September was the result of contract negotiations between the boat owners who are represented by the National Chamber of the Fishery Industries, and the cooperatives which are represented by themselves and the Mexican Government. The negotiations began with the cooperatives wanting to take charge of the marketing of the entire catch and paying the boat owner 10 percent of the net profits. Later, the negotiations settled around the points mentioned above, and that developed toward the latter part of September.

When negotiations on a new contract for the coming season began in August, it was expected that the price to the cooperatives would be increased based on higher living costs. But before an agreement was reached, word was received from the Confederación Nacional de Cooperativas de la República Mexicana (National Federation of Cooperatives), that the new contract should provide that the boat owners must fully outfit the vessel as was done the previous year. The cooperatives were assigned certain expenses which the boat owners stipulated should not exceed 25 percent, with the balance of the expenses to be borne by the boat owners. The gross catch was to be equally divided between boat owners and cooperatives.

The shrimp fishing fleet, consisting of some 200 vessels, was being provisioned and getting ready to sail on September 15. Ship suppliers had accumulated large quantities of perishable foods such as meat, eggs, and vegetables, which they planned to load aboard the refrigerated vessels before their departure. Those suppliers had no cold-storage facilities and their loss because of the delayed sailing date was considerable. Expecting that the order to sail might come at any day, additional ice was placed in the boats so that they could leave on short notice with a full supply.

Shrimp fishing in Mexico has been reserved for the cooperative fishermen since the middle of 1940, and until recent years the majority of the shrimp vessels were privately owned, but operated by cooperative fishermen on a contractual basis approved by the Government.

The shrimp industry, including fishing, freezing, and exporting shrimp, is the most important factor in Mazatlan's economy. The 1961/62 shrimp fishing season was unusual in that landings were heavier than they normally are, and prices on the United States market were higher than usual. July through September 15, 1962, was the closed season for Mexico's west coast shrimp fishery. During the closed season to shrimp fishing, freezing plants are cleaned, machines and equipment are overhauled, and the boats are put into shape for the new fishing season. After that two-months period of idleness, it was anticipated that the vessels would sail about mid-September as usual, and possibly repeat the good shrimp landings of the previous season.

As far as Mexico's fishing operations in international waters are concerned, it has been pointed out by observers that those waters provide 70 percent of the shrimp landed at Mazatlan. Their thinking is that if the vessel tie-up were to continue, United States shrimp vessels could well come into that area and take full advantage of the existing deadlock in Mexico's west coast shrimp fishery.

The Mexican cooperatives have had a virtual monopoly on Mexico's shrimp fishing industry since the late 1930's when it was decreed by the Government that the cooperatives only could fish for shrimp in national waters. The cooperatives, which almost without exception own no fishing vessels, operate them with the boat owners who are known as "armadores." A two-year contract, signed in August 1960, stated that the boat owners were to provide boats fully equipped with tackle, ice, provisions, and with vessel engines that were satisfactory to the vessel's engineer. The crews went aboard with only their personal effects. The boat owners paid the captains an average of 50 pesos (US\$4.00) a day, the engineers 40 to 50 pesos a day, and also paid the cooks whose pay varied widely. In addition to wages, the 3 crew members would receive a bonus if the boat returned to port with more than 3 tons of shrimp. The bonus varied with the size of the catch. The rest of the crew were paid by the cooperatives.

The boat owners paid the cooperatives 3,040 pesos (\$243) a ton for the catch which was delivered to the freezing plants for processing and packing on a fee basis. During the 1961/62 fishing season, the cost of the processing and packing operation was about 1,750 pesos (\$140) a ton which included the cost of the waxed cardboard container. The boat owner received an estimated average price of 20,000 pesos (\$1,600) a ton for his shrimp.

The "armadores" or boat owners have an estimated investment of 400,000 pesos (\$32,000) in each vessel. New vessels are now estimated to cost 560,000 pesos (\$44,800) each. The size of the boat owner's investment, plus operating and maintenance costs, precluded their acceptance of the contract terms offered in August 1962 by the cooperatives. According to law, the boat owners are not to fish for shrimp in Mexican waters. They could possibly go out beyond the Mexican territorial fishing limits and fish there, but such a move could result in some sort of duty or penalty charge which would make the landing of shrimp an economic impossibility. It was suggested that such vessels might fish in international waters and take their catch to other countries, such as Guatemala, for processing. It was doubted that such action would be taken by any of the vessels as a solution to the problem. Boat owners might be agreeable to selling their vessels to the cooperatives, but these do not have the money to buy them.

Mexico exported slightly more than 79 million pounds of shrimp to the United States in 1961. Mazatlan's shrimp industry exported about 22 million pounds of shrimp that year at prices of from 75 to 80 cents a pound, representing earnings of about \$17 million.

Contracts for the building of 11 new fishing vessels in Mazatlan were cancelled in September. (United States Consulate, Mazatlan, dispatch, September 21, 1962; United States Embassy, Mexico City, dispatch dated September 27, 1962.)



Portugal

CANNED FISH EXPORTS,
JANUARY-JUNE 1962:

Portugal's total exports of canned fish during the first half of 1962 were 3.8 percent greater than in the same period of 1961. Sar-

Portugal (Contd.):

dines accounted for 82.3 percent of the 1962 exports of canned fish, followed by anchovy fillets with 9.2 percent.

Portugal's principal canned fish buyers in the first half of 1962 were Germany with 6,251 metric tons, followed by the United Kingdom with 4,506 tons, the United States with 3,718 tons, Italy with 2,896 tons, and France with 2,283 tons.

Portuguese Canned Fish Exports, January-June 1961-1962				
Product	January-June			
	1962		1961	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	25,102	1,321	24,212	1,274
Chinchards	719	37	791	41
Mackerel	614	24	278	11
Tuna and tuna-like	1,125	37	1,258	45
Anchovy fillets	2,813	281	2,699	270
Others	131	7	140	7
Total	30,504	1,707	29,378	1,648

In June 1962, Portugal's canned fish exports to the United States consisted of 237 tons of sardines, 238 tons of tuna, 93 tons of anchovy fillets, and 3 tons of other species. (*Conservas de Peixe*, August 1962.)

CANNED FISH PACK,
JANUARY-JUNE 1962:

Portugal's total pack of canned fish in oil or sauce for the first half of 1962 was 4.7 percent greater than in the same period of 1961. The sardine pack accounted for 63.7 percent of the total pack, followed by anchovy fillets with 18.3 percent of the total. There were increases in 1962 in the pack of sardines (up 15.4 percent), chinchards, and anchovy fillets. But the pack of tuna dropped 44.1 percent and the pack of mackerel also declined.

Portuguese Canned Fish Pack, January-June 1961-1962				
Product	January-June			
	1962		1961	
	Metric Tons	1,000 Cases	Metric Tons	1,000 Cases
In Oil or Sauce:				
Sardines	10,746	565	9,314	490
Chinchards	1,289	68	641	34
Mackerel	188	7	533	21
Tuna and tuna-like	1,466	49	2,621	94
Anchovy fillets	3,081	368	2,842	285
Others	108	5	164	9
Total	16,878	1,002	16,115	933

During the first half of 1962 sardine landings amounted to 23,801 metric tons, up 14.2

percent from sardine landings of 20,847 tons in the same period of 1961. (*Conservas de Peixe*, August 1962.)

MODERN FISHING BASE PLANNED:

A fishing base with modern equipment for handling tuna and other fish is planned for Sao Vicente in the Cape Verde Islands by Portuguese and German interests. The base will have freezing and preserving machinery, equipment for processing fish meal and oil, a saline water conversion unit, modern laboratory, and a community recreation center.

The cost of building the fishing base in the Cape Verde Islands in the Atlantic Ocean several hundred miles west of Dakar (West Africa) and the cost of acquiring several modern tuna vessels will amount to \$8,750,000. The major part of the financing will be provided by German interests on a deferred credit basis and most of the equipment will be of German origin. It is believed that Portuguese interests will assume responsibility at the base for the actual construction and fishing operations. (United States Embassy, Lisbon, September 14, 1962.)

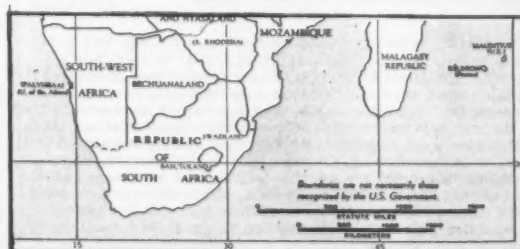


South Africa Republic

PLANS TO EXTEND TERRITORIAL
FISHING LIMITS TO 12 MILES:

The Government of the South Africa Republic intended to ask the South African Parliament at its last session to extend the territorial fishing limits to 12 miles. But according to a member of the Parliament, there had not been sufficient time to introduce such legislation and it is the Government's intention to do so at the next session.

The Senator making the announcement said that South Africa would be forced to take



South Africa Republic (Contd.):

this action since many other nations had already declared such territorial fishing limits. He added that, in fact, two-thirds of the countries bordering on the sea already had a 12-mile fishing limit. He further contended that several other countries, including the Soviet Union, were showing great interest in the fishery resources off South and South-West Africa, and that it was the Government's duty to protect the country's interests.

It was generally felt that the presence of Soviet fishing vessels operating close to the South-West African coast generated the demand for the extension of territorial fishing limits. (United States Consulate, Cape Town, August 10, 1962.)



Switzerland

JAPANESE CANNED TUNA PRICES,
MID-SEPTEMBER 1962:

In mid-September 1962, the prices paid by Swiss importers for Japanese solid pack canned tuna in oil were:

F.O.B. Japan: White Meat	
(48 7-oz. cans): Fancy A	\$ 9.70 a case
Fancy B	\$ 9.45 a case
C. & F. European Ports:	
White Meat: (48 7-oz. cans)	\$10.25 a case
(48 3½-oz. cans)	\$ 5.78 a case
(24 13-oz. cans)	\$10.00 a case
(6 6½-oz. cans)	\$11.40 a case
Light Meat: (48 7-oz. cans)	\$ 7.19 a case
(48 3½-oz. cans)	\$ 4.17 a case
(24 13-oz. cans)	\$ 7.26 a case
(6 6½-oz. cans)	\$ 8.25 a case

(United States Embassy, Bern, September 18, 1962.)



Saudi Arabia

AUTHORIZES IMPORT OF
JAPANESE CANNED SAURY:

The Egyptian Government has reportedly issued a new import license to an Egyptian company, authorizing that company to import Japanese products during October 1962 to March 1963, according to information received by Japanese exporters. The company is reported to be planning on importing around US\$600,000 worth of canned saury and other canned fish products from Japan, and is expected to open negotiations with Japa-

nese firms shortly. (Suisan Tsushin, October 3, 1962.)



United Kingdom

FISHERY LOANS INTEREST
RATES REVISED:

The British White Fish Authority announced that, as a result of a change in the rates of interest charged to them by the Treasury, their own rates of interest on loans made as from August 18 will be as follows:

Fishing vessels of not more than 140 feet, new engines, nets and gear: on loans for not more than 5 years, $5\frac{1}{4}$ percent, decrease $\frac{1}{8}$ percent; on loans for more than 5 years, but not more than 10 years, $5\frac{1}{2}$ percent, decrease $\frac{1}{8}$ percent; on loans for more than 10 years, but not more than 15 years, $6\frac{1}{4}$ percent, decrease $\frac{1}{8}$ percent; on loans for more than 15 years, but not more than 20 years, $6\frac{1}{2}$ percent, decrease $\frac{1}{8}$ percent.

Processing plants: on loans for not more than 20 years, $7\frac{3}{8}$ percent, decrease $\frac{1}{8}$ percent.

The rates on loans made before August 18 are unchanged.

Note: See Commercial Fisheries Review, September 1962 p. 109.



Venezuela

JAPANESE FISHING FIRM NOT ABLE
TO ROTATE TUNA TECHNICIANS
IN VENEZUELA:

The Chiba Prefectural Fisheries Promotion Company, a Japanese firm which jointly established a fishing company in Venezuela three years ago with a Venezuelan firm, is reportedly encountering difficulty in rotating its technical personnel stationed in Venezuela.

In 1959 and 1960, the Japanese company dispatched a total of 52 Japanese technicians to Venezuela to operate tuna vessels for the joint enterprise and to provide technical assistance. Of those 52 technicians, 16 who had fulfilled their three-year contracts returned to Japan in August 1962 and the Japanese company was planning to send 10 replacements to Venezuela. However, a hitch de-

Venezuela (Contd.):

veloped in this plan due to the Venezuelan Government's failure to approve the entry of the replacements. Reportedly, the Venezuelan Government's action to withhold approval was based on the law of that country which limits admission of non-Caucasian nationals into Venezuela. The Japanese company does not think that Venezuela intends to prohibit entry of Japanese nationals and is expecting

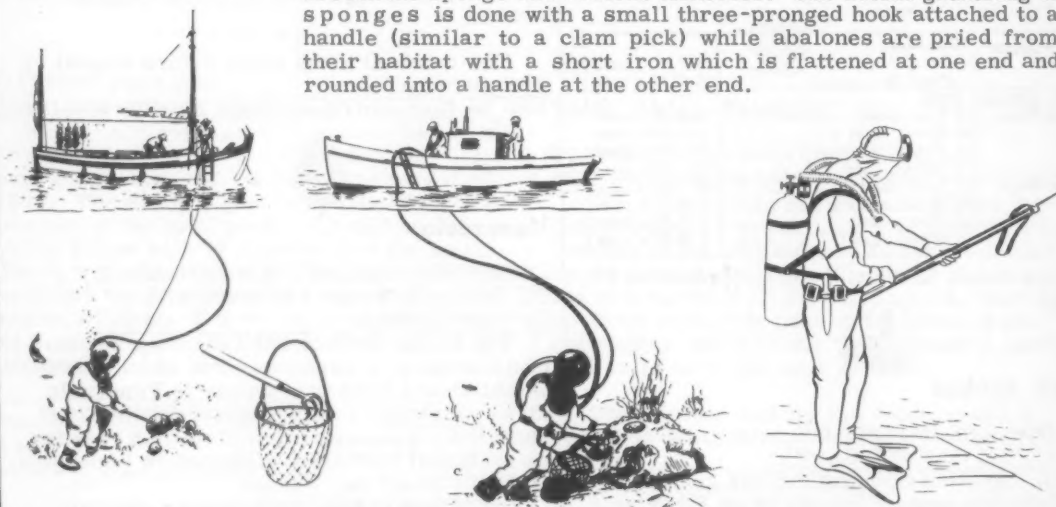
a formal announcement to be made on this matter by the Venezuelan Government.

The joint Japanese-Venezuelan fishing company was established with a capital investment of 100 million yen (US\$278,000) and three vessels (two 90-ton and one 300-ton vessels) invested by the Japanese company. This joint company now has a fleet of seven tuna vessels operating in the Caribbean Sea, which in 1961 landed a total of 770 metric tons of fish. (Suisan Keizai Shimbun, September 25, 1962.



DIVING OUTFITS

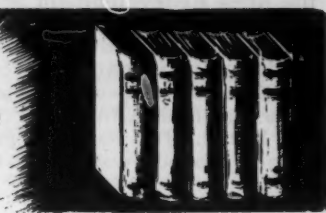
A diving outfit may consist of a face mask supplied with air from a tank carried on the back of the diver, or a regular diving suit which encases the diver and is supplied air by a pump on the deck of a vessel. The first method, commonly called a skin diving outfit, is used in capturing fish or shellfish with a spear or bow gun. The regular diving outfit is used in the sponge and abalone fisheries. The actual gathering of sponges is done with a small three-pronged hook attached to a handle (similar to a clam pick) while abalones are pried from their habitat with a short iron which is flattened at one end and rounded into a handle at the other end.



Note: Excerpt from Circular 109, Commercial Fishing Gear of the United States, for sale from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., single copy, 40 cents.



FEDERAL ACTIONS



Department of Commerce

AREA REDEVELOPMENT ADMINISTRATION

INDUSTRIAL LOAN TO MAINE FISHERY FIRM APPROVED:

A \$275,000 industrial loan to aid expansion of Forty-Fathoms Fisheries, Inc., at Rockland, Maine, has been approved by the Area Redevelopment Administration (ARA) of the U. S. Department of Commerce. The firm's expansion project will create 26 new jobs, according to the ARA announcement of September 14, 1962. The ARA loan, repayable over a 15-year period and bearing an annual interest rate of 4 percent, will finance only part of the fishery firm's \$425,000 expansion project. Additional support has been obtained from a local nonprofit organization known as Knox Industries, Inc., which will contribute \$60,000, and a bank in Portland, Maine, which will invest \$60,000. Forty-Fathoms Fisheries is putting \$30,000 of its own funds into the project.

The money will be used to buy land, construct a new building for frozen fish storage, and purchase machinery and equipment. The 26 new jobs created by the expanded facilities will add about \$90,000 a year to the firm's local payroll. New facilities will also allow diversification and the addition of a fish stick and fish portion unit which will help place operations on a year-round rather than a seasonal basis. The firm now employs about 300 people in Rockland.

Rockland is in Knox County, Maine, which was designated as eligible to participate in the Area Redevelopment program because of persistent and substantial unemployment.

The Small Business Administration investigated the project and conducted negotiations which led to approval of the loan by ARA. The U. S. Bureau of Commercial Fisheries recommended approval of the loan subject to adequate safeguards that purchase of domestic fish would not be abandoned. Forty-

Fathoms Fisheries, Inc., of Rockland is a subsidiary of Ocean Fisheries, Limited, Halifax, Nova Scotia.

INDUSTRIAL LOAN TO WASHINGTON OYSTER FIRM APPROVED:

A \$110,000 industrial loan to a Washington State oyster firm has been approved by the Area Redevelopment Administration (ARA) of the U. S. Department of Commerce. The loan will help provide 40 new year-round jobs in Nahcotta, Wash., where job opportunities are limited. The ARA announcement of September 5, 1962, pointed out that unemployment in this community of 5,756 people averaged 11.6 percent of the work force in 1961.

The loan, repayable over a 12-year period and bearing an annual interest rate of 4 percent, will be made to the Northwest Oyster Farms, Inc., of Nahcotta. The firm plans to expand its oyster farming and processing operations in a project that will cost \$171,623. Additional financing has been obtained from a nonprofit organization known as Pacific County Development Co., which is contributing \$17,162 and a bank in Ilwaco, Wash., which is investing \$9,699. Northwest Oyster Farms is putting \$34,762 of its own funds into the expansion project.

The money will be used to purchase a plant, specialized machinery and equipment, and an oyster-harvesting dredge. The company now holds leases on 1,000 acres of oyster tidelands. In addition to harvesting and canning fresh oysters, the company will process and can smoked and "casserole" oysters. It will also do custom processing for other companies. The firm plans to market its canned oysters nationwide, thereby putting its operation on a year-round rather than seasonal basis.

Nahcotta is in Pacific County, Wash., which was designated as eligible to participate in

the Area Redevelopment program because of substantial and persistent unemployment and underemployment. The Small Business Administration investigated the feasibility of the Nahcotta project and made recommendations on which ARA's approval of the loan was based. The Nahcotta project has also been approved by the U. S. Bureau of Commercial Fisheries.



Department of Health, Education and Welfare

FOOD AND DRUG ADMINISTRATION

CANNED TUNA LABELS MUST SAY "LIGHT" OR "DARK."

Canned tuna prepared from dark meat must be labeled "dark," and tuna packed in water instead of oil must be labeled to show the words "in water" as a part of the name, according to a food standards ruling published by the Food and Drug Administration. The new labeling requirements were made final after a review of objections to a tentative order published March 31, 1961, based on evidence presented at public hearings.

Lighter colored canned tuna is generally considered more desirable and there have been consumer complaints in the past because rather dark tuna was labeled "light," the agency said. Under the standard, tuna will be required to be labeled "white," "light," or "dark." In the case of blends of light and dark tuna, the label will show both color designations. Color designations are determined by measurements made on a special optical instrument.

One of the issues for the hearing was whether dark meat tuna should be so labeled. One packer objected to a label designation of certain dark portions of the meat as "dark," and proposed instead that the product be labeled simply as "tuna." However, a majority of more than 4,000 consumers interviewed were interested in whether the tuna they serve is light or dark tuna, and substantially all of them wanted the labels to give this information.

The other issue dealt with in the hearing was whether the label of water-packed tuna should bear the words "in water." Objectors asserted that the oil in oil-packed tuna is discarded and is not an edible part of the contents. However, the consumer survey showed that more than half of those answering always or sometimes use the oil. It was concluded that consumers are interested in knowing whether the tuna they buy is the conventional oil-pack, or is tuna packed in water.

This conclusion as stated in the tentative order was challenged by distributors of water-packed tuna imported from Japan. Restudy of the hearing record resulted in revision of the findings of fact. However, the revisions did not alter the ultimate conclusion that consumer interests are best served by retaining the requirement that the words "in water" be included in the name on labels of water-packed tuna.

The new labeling requirements become effective on January 5, 1963, and complete the official definitions and standards of identity for tuna. These definitions and standards cover composition, fill of container, and labeling of canned tuna fish.

Notes: See Commercial Fisheries Review, October 1962 p. 69.

* * * * *

USE OF HYDROGENATED SPERM OIL PERMITTED AS FOOD ADDITIVE:

The food additive hydrogenated sperm oil as a release agent or lubricant in bakery pans may be safely used under certain conditions. The amendment to the food additive regulations providing for this change as published by the Food and Drug Administration in the October 16, 1962 Federal Register follows:

Title 21—FOOD AND DRUGS

Chapter I—Food and Drug Administration, Department of Health, Education, and Welfare

SUBCHAPTER B—FOOD AND FOOD PRODUCTS

PART 121—FOOD ADDITIVES

Subpart D—Food Additives Permitted in Food for Human Consumption

HYDROGENATED SPERM OIL

The Commissioner of Food and Drugs having evaluated the data submitted in a petition (FAP 761) filed by Archer-Daniels-Midland Company, 733 Marquette Avenue, Minneapolis 40, Minnesota, and other relevant material, has concluded that the following regulation should issue with respect to the food additive hydrogenated sperm oil as a release agent or lubricant in bakery pans. Therefore, pursuant to the provisions of the Federal Food, Drug, and Cosmetic Act (sec. 409(c)(1), 72 Stat. 1786; 21 U.S.C. 348(c)(1)), and under the authority delegated to the Commissioner by the Secretary of Health, Education, and Welfare (25 F.R. 8625), the food additive regulations (21 CFR Part 121) are amended by adding to Subpart D the following new section:

§ 121.1101 Sperm oil, hydrogenated.

The food additive hydrogenated sperm oil may be safely used in accordance with the following prescribed conditions:

(a) The sperm oil is derived from rendering the fatty tissue of the sperm whale or is prepared by synthesis of fatty acids and fatty alcohols derived from the sperm whale. The sperm oil obtained by rendering is refined. The oil is hydrogenated.

(b) It is used alone or as a component of a release agent or lubricant in bakery pans.

(c) The amount used does not exceed that reasonably required to accomplish the intended lubricating effect.

Any person who will be adversely affected by the foregoing order may at any time within 30 days from the date of its publication in the FEDERAL REGISTER file with the Hearing Clerk, Department of Health, Education, and Welfare, Room 5440, 330 Independence Avenue SW., Washington 25, D.C., written objections thereto. Objections shall show wherein the person filing will be adversely affected by the order and specify with particularity the provisions of the order deemed objectionable and the grounds for the objections. If a hearing is requested, the objections must state the issues for the hearing. A hearing will

be granted if the objections are supported by grounds legally sufficient to justify the relief sought. Objections may be accompanied by a memorandum or brief in support thereof. All documents shall be filed in quintuplicate.

Effective date. This order shall be effective on the date of its publication in the **FEDERAL REGISTER**.

(Sec. 409(c)(1), 72 Stat. 1786; 21 U.S.C. 48(c)(1))

Dated: October 10, 1962.

GEO. P. LARRICK,
Commissioner of Food and Drugs.



Department of the Interior

FISH AND WILDLIFE SERVICE

BUREAU OF COMMERCIAL FISHERIES

PROPOSED YELLOWFIN TUNA CONSERVATION REGULATIONS FOR EASTERN PACIFIC:

"An unprecedented advance in safeguarding the world's marine resources--protecting a resource before it has been seriously damaged by overutilization--was made this week when President Kennedy signed a bill to protect and conserve the yellowfin tuna," Acting Secretary of the Interior James K. Carr said on October 19, 1962.

The bill amends the Tuna Convention Act of 1950. Regulations implementing it were published in the Federal Register of October 18.

"This broad new international conservation effort of the Administration carries out the recommendations of the Inter-American Tropical Tuna Commission, an investigative body established by the Tuna Convention of which the United States, Costa Rica, Panama, and Ecuador are members," Acting Secretary Carr explained. "Scientific evidence collected by the Commission indicated that unless the yellowfin tuna fishery in the eastern tropical Pacific Ocean was regulated at once the yield might be seriously reduced."

The bill signed by President Kennedy was introduced in Congress by Senator Warren G. Magnuson of Washington. Applying only to the yellowfin tuna fishery in the eastern tropical Pacific Ocean, the proposed regulations will not interfere with fishing for albacore, bluefin, skipjack, and other tuna. Basically, the regulations provide for:

1. The annual publishing of a yellowfin catch quota, recommended by the Tuna Commission, to be approved by the Secretary of the Interior and the Secretary of State. (For example, the Commission recommended for 1962 a quota of 78,000 short tons for all nations during the open season for yellowfin tuna, and 5,000 tons to be reserved for incidental catches made while fishing for other tuna species after the yellowfin season is closed; the total 1961 catch was 117,300 tons.)

2. An open season from January 1 of each year, terminating on a date (to be determined by the Tuna Commission's Director of Investigations) on which it is deemed the annual catch limit will be reached. This will be based on the aggregate weight of yellowfin tuna landings reported since the opening of the season and the estimated additional quantities expected to be taken by the vessels of all nations in the regulatory area;

3. Permission for vessels to land not more than 15 percent by weight of yellowfin among the other tuna catch on each fishing trip after the yellowfin tuna fishing season is closed;

4. Annual registration and clearance for each fishing trip, in conformity with the regulations, of all vessels wishing to operate in the yellowfin tuna fishery in the regulatory area; and,

5. Provisions for requiring an accurate log of pertinent fishing operations, for reporting by radio once a week during voyages, and for reporting the delivery or sale of a catch of tuna.

Exempted are authorized research fishing vessels, common carrier vessels, those less than 10 gross tons, and those engaged in sport fishing.

These proposed regulations will apply only to persons and vessels subject to the jurisdiction of the United States, and will become operative when all other nations fishing in the regulatory area for species covered under the Convention also comply with the recommendations made by the Tuna Commission in May 1962 for yellowfin tuna conservation. The Government of Costa Rica has invited representatives of all such nations to meet at San Jose, Costa Rica, in November 1962 to set the date when these measures can be put into effect.

Since some of the countries are not parties to the Convention, the conservation objectives depend on international cooperative efforts to implement the Commission's recommendations, Acting Secretary Carr said. To encourage effective cooperation, the regulations also provide for the restriction of all imports of yellowfin tuna taken from the regulatory area from any country which does not comply with conservation measures recommended by the Tuna Commission. In the case of continued abuses, the offending country could be banned from selling in the United States any species of tuna under investigation by the Commission and taken from the regulatory area.

Interested persons were invited to participate in the rule-making process by submitting written data, views, or arguments, to the Area Director, California Area, U. S. Bureau of Commercial Fisheries, 101 Seaside Avenue, Terminal Island, Calif., by November 17, 1962.

A public hearing was held November 19, 1962, at the United Portuguese Club, San Diego 6, Calif., where views were presented orally.

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

[50 CFR Parts 280, 281]

EASTERN PACIFIC TUNA FISHERIES

Yellowfin Tuna; Restrictions on Tuna Imports

Notice is hereby given, pursuant to section 4(a) of the Administrative Procedure Act of June 11, 1946 (60 Stat. 237), and section 6(c) of the Tuna Conventions Act of 1950 (64 Stat. 778), as amended by Public Law 87-814, that the Secretary of the Interior proposes to amend Title 50, Code of Federal Regulations, by adding a new Subchapter H—Eastern Pacific Tuna Fisheries, consisting of Part 280—Yellowfin Tuna and Part 281—Restrictions on Tuna Imports. The proposed regulations are set forth in tentative form below.

The proposed regulations are to be issued under the authority contained in section 6(c) of the Tuna Conventions Act of 1950, as amended by Public Law 87-814. In accordance with the authority cited, after adoption of the regulations proposed as Part 280 and publi-

cation thereof in the *FEDERAL REGISTER*, such regulations are to become applicable to all vessels and persons subject to the jurisdiction of the United States on such date as the Secretary of the Interior shall prescribe, but in no event prior to an agreed date for the application by all countries whose vessels engage in fishing for species of fish covered by the Convention for the Establishment of an Inter-American Tropical Tuna Commission (1 U.S.T. 230), in the regulatory area on a meaningful scale of effective measures for the implementation of the Commission's recommendations applicable to all vessels and persons subject to their respective jurisdictions. Steps are being taken to reach agreement with the several countries whose fishermen participate in the tuna fisheries of the eastern Pacific Ocean concerning a date for the simultaneous application by all such countries of suitable conservation measures to be observed by their fishing vessels.

Prior to the final adoption of the proposed regulations, consideration will be given to any data, views, or arguments pertaining thereto which are submitted in writing to the Area Director, Bureau of Commercial Fisheries, 101 Seaside Avenue, Terminal Island, California, within the period of 30 days from the date of publication of this notice in the *FEDERAL REGISTER*. Interested persons will also be afforded an opportunity to comment orally on the proposed regulations at a public hearing to be held at United Portuguese Club, 2818 Addison Street, San Diego, California, beginning at 9:30 a.m., November 19, 1962. Any person who intends to present views orally at such hearing is requested to furnish in writing his name and the name of the organization he represents, if any, to the said Area Director not later than November 15, 1962.

Issued at Washington, D.C., and dated October 16, 1962.

JAMES K. CARR,
Acting Secretary of the Interior.

PART 280—YELLOWFIN TUNA

- Sec.
280.1 Definitions.
280.2 Basis and purpose.
280.3 Catch limit.
280.4 Open season.
280.5 Closed season.
280.6 Registration certificates.
280.7 Reports and record keeping.
280.8 Persons and vessels exempted.

AUTHORITY: §§ 280.1 to 280.8 issued under sec. 6, 64 Stat. 776, as amended, 16 U.S.C. 985.

§ 280.1 Definitions.

For the purposes of this part, the following terms shall be construed, respectively, to mean and to include:

(a) *Convention*. The Convention for the Establishment of an Inter-American Tropical Tuna Commission, signed at Washington May 31, 1949, by the United States of America and the Republic of Costa Rica (1 U.S.T. 230).

(b) *Commission*. The Inter-American Tropical Tuna Commission established pursuant to the Convention.

(c) *Director of Investigations*. The Director of Investigations, Inter-American Tropical Tuna Commission, La Jolla, California.

(d) *Bureau Director*. The Director of the Bureau of Commercial Fisheries, Fish and Wildlife Service, United States Department of the Interior.

(e) *Area Director*. The Area Director, California Area, Bureau of Commercial Fisheries, Terminal Island, California.

(f) *Regulatory area*. All waters of the eastern Pacific Ocean bounded by the mainland of the Americas and the following lines: Beginning at a point on the mainland where the parallel of 40 degrees north latitude intersects the coast; thence due west to the meridian of 125 degrees west longitude; thence due south to the parallel of 20 degrees north latitude; thence due east to the meridian of 120 degrees west longitude; thence due south to the parallel of 5 degrees north latitude; thence due east to the meridian of 110 degrees west longitude; thence due south to the parallel of 10 degrees south latitude; thence due east to the meridian of 90 degrees west longitude; thence due south to the parallel of 30 degrees south latitude; thence due east to a point on the mainland where the parallel of 30 degrees south latitude intersects the coast.

(g) *Yellowfin tuna*. Any fish of the species *Thunnus albacares* (synonymy: *Neothunnus macropterus*).

(h) *Other tuna fishes*. Those species (and none other) of the family Scombridae which are known as:

(1) Albacore—*Thunnus alalunga* (synonymy: *Thunnus germon*).

(2) Bigeye—*Thunnus obesus* (synonymy: *Parathunnus sibi*).

(3) Bluefin—*Thunnus thynnus* (synonymy: *Thunnus saliens*).

(4) Skipjack—*Katsuwonus pelamis* (synonymy: *Euthynnus pelamis*).

(i) *Fishing vessel*. Every kind, type or description of watercraft subject to the jurisdiction of the United States (other than purse seine skiffs) used in or outfitted for catching or processing fish or transporting fish from fishing grounds.

(j) *Person*. Individual, association, corporation or partnership subject to the jurisdiction of the United States.

(k) *Open season*. The time during which yellowfin tuna may lawfully be captured and taken on board a fishing vessel in the regulatory area without limitation on the quantity permitted to be retained during each fishing trip. Unless otherwise specified, whenever time is stated in hours it shall be construed to refer to standard time in the area affected.

(l) *Closed season*. The time during which yellowfin tuna may not be taken or retained on board a fishing vessel in quantities exceeding the amounts permitted to be taken and retained as an incident to fishing for other tuna fishes.

§ 280.2 Basis and purpose.

(a) At a special meeting held at Long Beach, California on September 14, 1961, the Commission recommended to the parties to the Convention that they take joint action to limit the annual catch of yellowfin tuna from the eastern Pacific Ocean by fishermen of all nations during the calendar year 1962. This recommendation was made pursuant to paragraph 5 of Article II of the Convention on the basis of scientific investigations conducted by the Commission over a period of time dating from 1951. The most re-

cent years of this period were marked by a substantial increase in fishing effort directed toward the yellowfin tuna stocks, resulting in a rate of exploitation of these stocks greater than the maximum average sustainable yield. The Commission's recommendation for joint action by the parties to restrict the yellowfin tuna fishery has as its objective the restoration of these stocks to a level of abundance which will permit maximum average sustainable catch and the maintenance of the stocks in that condition in the future.

(b) At its annual meeting held at Quito, Ecuador, May 16-18, 1962, the Commission affirmed its earlier conclusions regarding the need for regulating the yellowfin tuna fishery in the eastern Pacific Ocean and again recommended to the parties to the Convention that they take joint action to:

(1) Establish a prescribed tonnage limit on the total catch of yellowfin tuna by the fishermen of all nations during the calendar year 1962 from an area of the eastern Pacific Ocean defined by the Commission;

(2) Establish open and closed seasons for yellowfin tuna under prescribed conditions;

(3) Permit the landing of not more than fifteen percent (15%) by weight of yellowfin tuna among the tuna taken on a fishing trip made after the close of the yellowfin tuna fishing season; and

(4) Obtain from governments not parties to the Convention, but having vessels which operate in the fishery, co-operation in effecting the recommended conservation measures.

(c) At a meeting held at -----, on ----- 1962,¹ representatives of the Governments of -----

-----, and the United States of America (being the several countries which are parties to the Convention or, not being parties, exercised jurisdiction over vessels which, during 1962, engaged in fishing for species covered by the Convention in the regulatory area on a meaningful scale), gave assurances that beginning as of -----, each country would apply to all vessels and persons subject to its jurisdiction effective measures for the implementation of the recommendations made by the Commission in May 1962 for a yellowfin tuna conservation regime.

(d) The regulations in this part are designed to implement the Commission's current and future recommendations for the conservation of yellowfin tuna so far as they affect all vessels and persons subject to the jurisdiction of the United States.

§ 280.3 Catch limit.

The annual limitation on the quantity of yellowfin tuna permitted to be taken from the regulatory area during the open season by the fishing vessels of all nations participating in the fishery will be fixed and determined on the basis of recommendations made by the Commission pursuant to paragraph 5 of Article II of the Convention. Upon approval by the Secretary of State and the Secretary of the Interior of the recommended catch limit, announcement of the catch limit

¹ Arrangements are being made to hold a meeting of the Governments concerned early in November 1962.

thus established shall be made by the Bureau Director through publication of a suitable notice in the *FEDERAL REGISTER*. The Bureau Director, in like manner, shall announce any revision or modification of an approved annual catch limit which may subsequently enter into force.

§ 280.4 Open season.

The open season for yellowfin tuna fishing shall begin annually at 12:01 a.m. of the first day of January and terminate at midnight on a date to be determined and announced as provided in § 280.5.

§ 280.5 Closed season.

(a) Pursuant to authority granted by the Commission, the Director of Investigations will maintain records of the catches of yellowfin tuna taken from the regulatory area and landed from time to time during the open season by the fishing vessels of all nations participating in the fishery. By taking into account the aggregate weight of the yellowfin tuna landings and the estimated additional quantities of yellowfin tuna expected to be taken by the fishing vessels of all nations operating in the regulatory area, the Director of Investigations will determine the date on which he deems the annual catch limit will be reached and will promptly notify the Bureau Director of such date. The Bureau Director shall announce the season closure date thus established by publication in the *FEDERAL REGISTER*. The closure date so announced shall be final except that if it shall at any time become evident to the Director of Investigations that the catch limit will not be reached by such date, he may substitute another date which shall be announced by the Bureau Director in like manner as provided for the date originally determined.

(b) After the date determined in the manner provided in this section for the closing of the yellowfin fishing season, the taking of yellowfin tuna shall be prohibited until the yellowfin tuna fishing season reopens on January 1 next following the close of the season: *Provided*, That any fishing vessel which has departed port to engage in yellowfin tuna fishing prior to the date of the closure of the yellowfin fishing season may continue to take and retain yellowfin tuna without restriction as to quantity until the fishing voyage has been completed by unloading the whole or any part of the fishing vessel's cargo of tuna in port: *Provided further*, That after the close of the yellowfin tuna fishing season as provided in this section, yellowfin tuna captured as an incident to fishing for other tuna fishes may be taken on board a fishing vessel and landed in an amount not exceeding fifteen percent by weight of all tuna fishes on board the vessel from which the fishing was conducted.

§ 280.6 Registration certificates.

(a) Except as permitted by § 280.8, after the _____ day of _____, 1962; no person shall use a fishing vessel for the capture, retention, transportation, or landing of yellowfin tuna in any quantity from the regulatory area unless such vessel shall have first been registered and cleared for yellowfin tuna fishing in conformity with the provisions of this section.

(b) The managing owner, master, or other person in charge of a fishing ves-

sel may register such vessel to engage in yellowfin tuna fishing by furnishing, either by letter or on a form to be supplied by the Bureau of Commercial Fisheries, information specifying the names and addresses of the managing owner and master, respectively, of the vessel, and the name, official number, home port, and cargo capacity (in tons of frozen tuna) of the vessel. Such application shall be submitted to the Area Director who shall, without charge, issue in the name of the fishing vessel a certificate evidencing its registration to engage in yellowfin tuna fishing during the calendar year applied for. Each such certificate shall expire at the end of the calendar year during which it is issued and shall be replaced by a new certificate upon application made in like manner as prescribed for the original certificate. New certificates shall similarly be issued to replace lost or mutilated certificates.

(c) Not earlier than 48 hours prior to each departure from port to engage in tuna fishing during the open season for yellowfin tuna, the master or other person in charge of a fishing vessel shall present the vessel's registration certificate for validation. Validation of a registration certificate shall be accomplished in the manner specified in paragraph (e) of this section. Such validation shall terminate at the time of the first landing thereafter of any part of the catch of tuna taken during the voyage authorized by the validated certificate.

(d) Prior to each departure from port during the closed season to engage in fishing for species of tuna other than yellowfin, the master or other person in charge of a fishing vessel shall present the vessel's registration certificate for validation for the purpose of permitting the retention on board such vessel of yellowfin tuna, taken as an incident to fishing for other tuna species, in an amount not exceeding fifteen percent by weight of all tuna species taken by the fishing vessel during the voyage covered by the validated certificate. Validation of a registration certificate during the closed season shall likewise be accomplished in the manner prescribed in paragraph (e) of this section and such validation shall terminate at the time of the first landing thereafter of any part of the catch of tuna taken during the voyage covered by the validated certificate.

(e) Validation of a registration certificate as required in paragraphs (c) and (d) of this section shall, upon proper request, be entered as an endorsement made by an authorized validating officer upon the certificate held by the fishing vessel. Authorized officers as listed below, and their authorized representatives, may perform the functions of authorized validating officers:

(1) For fishing vessels departing ports of the United States—

Area Director, California Area, Bureau of Commercial Fisheries, Terminal Island, California; and Regional Director, Pacific Region, Bureau of Commercial Fisheries, Arendt Building, Seattle, Washington.

Officers of the United States Bureau of Customs.

Officers of the United States Coast Guard.

Officers and employees of the Commonwealth of Puerto Rico.

(2) For fishing vessels departing foreign ports—

The officer in charge at each of the following United States Consular posts:

Colombia: Barranquilla, Bogota, Buenaventura, and Cali.

Chile: Antofagasta, Concepcion, Santiago, and Valparaiso.

Costa Rica: Puntarenas and San Jose.

Ecuador: Guayaquil and Quito.

El Salvador: San Salvador.

Guatemala: Guatemala.

Mexico: Mexico, D.F., and Mazatlan.

Nicaragua: Managua.

Panama: Colon and Panama.

Peru: Arequipa and Lima.

(f) As circumstances require, the Bureau Director from time to time shall revise the list of authorized validating officers by publishing appropriate changes in the *FEDERAL REGISTER*. In the event an authorized validating officer is not available in port at the time of impending departure of a fishing vessel on a fishing voyage, a validation of the nature required by paragraph (c) or (d) of this section may be obtained by letter or telegraphic communication.

(g) The registration certificate and validation endorsements thereon issued as provided in this section shall at all times be carried on board the fishing vessel for which issued and such certificate, the vessel, and its cargo shall at all times be subject to inspection for the purposes of this part by officers authorized to enforce the provisions of this part.

§ 280.7 Reports and record keeping.

The master or other person in charge of a fishing vessel holding a registration certificate issued under this part shall—

(a) Keep an accurate log of all fishing operations conducted from the vessel, entering therein for each day the name and official number of the vessel, date, noon position (stated in latitude and longitude or in relation to known physical features) and the estimated quantities (in short tons) of tuna fish by species which are taken on board the vessel: *Provided*, That the fishing record and bridge log maintained at the request of the Commission shall be deemed a sufficient compliance with this paragraph whenever the items of information specified herein are fully and accurately entered in such log;

(b) Report by radio at least once each calendar week during a fishing voyage (alternatively) to Radio Station WWD, La Jolla, California, 415.8 mc or 3805.6 kc, to Radio Station Balboa, Canal Zone (call letters and frequencies to be supplied later), or by prepaid commercial radio message directed to the Director of Investigations. Radio reports shall be made between the hours of 8:00 a.m. and 12:00 midnight and shall state the name of the fishing vessel and the cumulative estimated quantities, by species, of all tuna fish taken on board during the fishing voyage from the time of departure from port until the return of the vessel to port; and

(c) Furnish on a form supplied by the Bureau of Commercial Fisheries, immediately following the delivery or sale of a catch of tuna made by means of such vessel, a report, certified to be correct, giving the name and official number of the fishing vessel, the dates of commencement and conclusion of the fishing trip and listing separately by species and weight in short tons, the gross quantities

of each species of tuna fish so sold or delivered: *Provided*, That, at the option of the vessel master or other person in charge, a copy of the fish ticket, weigh-out slip, settlement sheet, or similar record customarily issued by the fish dealer or his agent may be used for reporting purposes, in lieu of the form supplied by the Bureau of Commercial Fisheries, if such alternate record is similarly certified and contains all items of information required by this subparagraph. Such report shall be delivered or mailed to the Area Director within 24 hours after the weigh-out has been completed.

§ 280.8 Persons and vessels exempted.

Nothing contained in §§ 280.2 to 280.7 shall apply to:

(a) Any person or vessel authorized by the Commission, the Bureau Director, or any State of the United States to engage in fishing for research purposes.

(b) Any vessel documented as a common carrier by the Government of the United States and engaged exclusively in the carriage of freight and passengers.

(c) Any vessel of less than ten gross tons.

(d) Any person or vessel engaged in sport fishing for personal use.

PART 281—RESTRICTIONS ON TUNA IMPORTS

Sec.	Definitions.
281.1	Basis and purpose.
281.2	Species subject to regulation.
281.3	Species under investigation by the Commission.
281.4	Investigations authorized.
281.5	Publication of findings.
281.6	Proof of admissibility.
281.7	Removal of import restrictions.

AUTHORITY: §§ 281.1 to 281.8 issued under sec. 6, 64 Stat. 778, as amended, 16 U.S.C. 955.

§ 281.1 Definitions.

For the purposes of this part, the following terms shall be construed, respectively, to mean and to include:

(a) *United States*. All areas under the sovereignty of the United States, the Trust Territory of the Pacific Islands, and the Canal Zone.

(b) *Convention*. The Convention for the Establishment of an Inter-American Tropical Tuna Commission, signed at Washington, May 31, 1949, by the United States of America and the Republic of Costa Rica (1 U.S.T. 230).

(c) *Commission*. The Inter-American Tropical Tuna Commission established pursuant to the Convention.

(d) *Bureau Director*. The Director of the Bureau of Commercial Fisheries, Fish and Wildlife Service, United States Department of the Interior.

(e) *Regulatory area*. All waters of the eastern Pacific Ocean bounded by the mainland of the Americas and the following line: Beginning at a point on the mainland where the parallel of 40 degrees north latitude intersects the coast; thence due west to the meridian of 125 degrees west longitude; thence due south to the parallel of 20 degrees north latitude; thence due east to the meridian of 120 degrees west longitude; thence due south to the parallel of 5 degrees north latitude; thence due east to the meridian of 110 degrees west longitude; thence due south to the parallel of

10 degrees south latitude; thence due east to the meridian of 90 degrees west longitude; thence due south to the parallel of 30 degrees south latitude; thence due east to a point on the mainland where the parallel of 30 degrees south latitude intersects the coast.

(f) *Yellowfin tuna*. Any fish of the species *Thunnus albacares* (synonym: *Neothunnus macropterus*).

(g) *Other tuna fishes*. Those species (and none other) of the family Scombridae which are known as:

(1) Albacore—*Thunnus alalunga* (synonym: *Thunnus germon*).

(2) Bigeye—*Thunnus obesus* (synonym: *Parathunnus sibi*).

(3) Bluefin—*Thunnus thynnus* (synonym: *Thunnus salens*).

(4) Skipjack—*Katsuwonus pelamis* (synonym: *Kathynnus pelamis*).

(h) *Fishing vessel*. Every kind, type or description of watercraft (other than purse seine skiffs) used in or outfitted for catching or processing fish or transporting fish from fishing grounds.

(i) *Person*. Individual, association, corporation or partnership.

§ 281.2 Basis and purpose.

(a) At a special meeting held at Long Beach, California on September 14, 1961, the Commission recommended to the Government of Costa Rica, Ecuador, Panama, and the United States of America, parties to the Convention, that they take joint action to limit the annual catch of yellowfin tuna from the eastern Pacific Ocean by fisherman of all nations during the calendar year 1962. This recommendation was made pursuant to paragraph 5 of Article II of the Convention on the basis of scientific investigations conducted by the Commission over a period of time dating from 1951. The most recent years of this period were marked by a substantial increase in fishing effort directed toward the yellowfin tuna stocks, resulting in a rate of exploitation of these stocks greater than that at which the maximum average sustainable yield may be obtained. The Commission's recommendation for joint action by the parties to regulate the yellowfin tuna fishery has as its objective the restoration of these stocks to a level of abundance which will permit maximum average sustainable catch and the maintenance of the stocks in that condition in the future.

(b) At its annual meeting held at Quito, Ecuador, May 16-18, 1962, the Commission affirmed its earlier conclusions regarding the need for regulating the yellowfin tuna fishery in the eastern Pacific Ocean and again recommended to the parties to the Convention that they take joint action to:

(1) Establish a prescribed tonnage limit on the total catch of yellowfin tuna by the fishermen of all nations during the calendar year 1962 from an area of the eastern Pacific Ocean defined by the Commission;

(2) Establish open and closed seasons for yellowfin tuna under prescribed conditions;

(3) Permit the landing of not more than fifteen percent (15%) by weight of yellowfin tuna among the tuna taken on a fishing trip made after the close of the yellowfin tuna fishing season; and

(4) Obtain from governments not parties to the Convention, but having

vessels which operate in the fishery, co-operation in effecting the recommended conservation measures.

(c) At a meeting held at _____ on _____ 1962,¹ representatives of the Governments of _____

_____, and the United States of America (being the several countries which are parties to the Convention or, not being parties, exercised jurisdiction over vessels which, during 1962, engaged in fishing for species covered by the Convention in the regulatory area on a meaningful scale), gave assurances that beginning as of _____, each country would apply to all vessels and persons subject to its jurisdiction effective measures for the implementation of the recommendations made by the Commission in May 1962 for a yellowfin tuna conservation regime.

(d) In conformity with the provisions of section 6(c) of the Tuna Conventions Act of 1950, as amended, and simultaneously with the adoption of the regulations in this part, the Secretary of the Interior has made effective Part 280 of this title for the purpose of carrying out the current and future recommendations of the Commission for the conservation of yellowfin tuna in the regulatory area so far as such recommendations affect all vessels and persons subject to the jurisdiction of the United States.

(e) The yellowfin tuna stocks recommended by regulation by the Commission constitute a significant part of an international high seas fishery in which the vessels of a number of countries are engaged in varying degrees. Since some of the countries are not parties to the Convention and, therefore, have no applicable treaty obligations to fulfill, the achievement of the conservation objectives with respect to the tuna resources of the eastern Pacific Ocean is dependent upon international cooperative efforts to implement the Commission's recommendations. With a view toward encouraging effective cooperation on the part of such countries, the Tuna Conventions Act of 1950, as amended, directs that restrictions be established on the importation of certain tuna fish from any country which shall fail to take action to prevent the occurrence of certain proscribed activities. Thus, section 6(c) of the Act provides that the Secretary of the Interior, with the concurrence of the Secretary of State, shall promulgate regulations—

(1) To prohibit the entry into the United States, from any country when the vessels of such country are being used in the conduct of fishing operations in the regulatory area in such manner or in such circumstances as would tend to diminish the effectiveness of the conservation recommendations of the Commission, of fish in any form of those species which are subject to regulation pursuant to a recommendation of the Commission and which were taken from the regulatory area; and

(2) To prohibit entry into the United States, from any country, of fish in any form of those species which are subject to regulation pursuant to a recommendation of the Commission and which were taken from the regulatory area by vessels other than those of such country in such manner or in such circumstances as would tend to diminish the effectiveness of the conservation recommendations of the Commission.

¹ Arrangements are being made to hold a meeting of the Governments concerned early in November 1962.

(f) Section 6(c) of the Act further provides that "in the case of repeated and flagrant fishing operations in the regulatory area by the vessels of any country which seriously threaten the achievement of the objectives of the Commission's recommendations, the Secretary of the Interior, with the concurrence of the Secretary of State, may, in his discretion, also prohibit the entry from such country of such other species of tuna, in any form, as may be under investigation by the Commission and which were taken in the regulatory area."

(g) The regulations in this part are designed to implement the provisions of section 6(c) of the Act with respect to import controls and to prescribe procedures for the establishment of restrictions on imports of tuna whenever such action shall be deemed warranted.

§ 281.3 Species subject to regulation.

The species of fish currently subject to regulation pursuant to a recommendation of the Commission within the meaning of section 6(c) of the Act is yellowfin tuna.

§ 281.4 Species under investigation by the Commission.

The species of fish currently under investigation by the Commission within the meaning of section 6(c) of the Act are yellowfin tuna, skipjack tuna, and bigeye tuna.

§ 281.5 Investigations authorized.

(a) The Bureau Director shall cause to be made from time to time such inquiries and investigations as may be necessary to keep himself and other persons concerned currently informed regarding the nature and effectiveness of the measures for the implementation of the Commission's recommendations which are being carried out by countries whose vessels engage in fishing within the regulatory area. In making a finding as to whether or not a country is condoning the use of vessels in the conduct of fishing operations in the regulatory area in such manner or in such circumstances as would tend to diminish the effectiveness of the conservation recommendations of the Commission, the Bureau Director shall take into account, among such other considerations as may appear to be pertinent in a particular case, the following factors:

(1) Whether or not the country provides or causes to be provided to the Commission pertinent statistics on a timely basis.

(2) Whether or not the country has in force conservation measures applicable to its own fishermen adequate for the implementation of the Commission's recommendations.

(3) Whether or not the country has in force measures for the control of landings in its ports of species subject to regulation which are taken in the regulatory area by fishermen of other countries contrary to the Commission's conservation recommendations.

(4) Whether or not the country, having put conservation measures into effect, takes reasonable action to enforce such measures.

(5) The number of vessels of the country which conduct fishing operations in the regulatory area.

(6) The quantity of species subject to regulation taken from the regulatory area by the country's vessels contrary

to the Commission's conservation recommendations and its relationship to (i) the total quantity permitted to be taken by the vessels of all countries participating in the fishery and (ii) the quantity of such species sought to be restored to the stocks of fish pursuant to the Commission's conservation recommendations.

(b) Any person who shall have reason to believe that the vessels of any country are being used in the conduct of fishing operations in the regulatory area in such manner or in such circumstances as would tend to diminish the effectiveness of the conservation recommendations of the Commission or that other acts within the purview of the import control provisions of section 6(c) of the Tuna Conventions Act of 1950, as amended, are occurring or are likely to occur, may communicate his belief to the Bureau Director. Every such communication shall contain or be accompanied by a full statement of the reasons for the belief, including a detailed description of such specific acts or events as may support the belief, and such other pertinent facts as may indicate a need for instituting an investigation as authorized in this part.

(c) Upon receipt by the Bureau Director of any communication submitted pursuant to paragraph (b) of this section and found to comply with the requirements of that paragraph, the Bureau Director promptly shall cause such investigation to be made as appears to be warranted by the circumstances of the case. In conducting such investigation the Bureau Director or his designated representative shall consider any representations offered by foreign interests, importers, brokers, domestic producers, or other interested persons. Unless good cause to the contrary shall exist, every such investigation shall be completed within 60 days following receipt of the communication.

§ 281.6 Publication of findings.

If it shall be determined on the basis of § 281.5 that species of fish subject to regulation or under investigation by the Commission, as the case may be, are ineligible for entry into the United States from a particular country pursuant to the provisions of section 6(c) of the Act, the Bureau Director, with the approval of the Secretary of the Interior, shall publish a finding to that effect in the FEDERAL REGISTER. Effective upon the date of publication of such finding in the FEDERAL REGISTER every shipment of fish in any form of the species under regulation or under investigation by the Commission offered for entry either directly or indirectly from the country named in the finding shall be denied entry unless it shall be established by satisfactory proof pursuant to § 281.7 that a particular shipment of such fish is not ineligible for entry: *Provided*, That entry shall not be denied and no such proof shall be required for any such shipment which, on the date of such publication, was in transit to the United States on board a vessel operating as a common carrier.

§ 281.7 Proof of admissibility.

For the purposes of § 281.6 and section 6(c) of the Tuna Conventions Act of 1950, as amended, a shipment of fish in any form of the species under regulation or under investigation by the Com-

mission offered for entry, directly or indirectly, from a country named in a finding published under such § 281.6 shall be deemed to be eligible for entry if the shipment is accompanied by a certificate of eligibility, executed in the form and manner set forth below, certifying that the tuna in the shipment are not of the species specified in the published finding or, if of such species, were not taken in the regulatory area. The required certificate of eligibility must be executed by a duly authorized official of the country named in the published finding and the certificate must be authenticated with respect to the signature and official position of the person executing the same by a consular officer or consular agent of the United States.

CERTIFICATE OF ELIGIBILITY

I, _____, an authorized officer of the Government of _____, certify that the shipment of tuna fish accompanied by this certificate, consisting of _____ of _____ (Quantity)

_____ in _____ (Species) (Number and kind of packages bearing the following marks or containers) and numbers _____

- ☐ (a) Contains no fish of the species prohibited entry into the United States by virtue of a finding of ineligibility published under regulations issued pursuant to section 6(c) of the Tuna Conventions Act of 1950, as amended.
- ☐ (b) Contains fish of the species prohibited entry into the United States by virtue of a finding of ineligibility published under regulations issued pursuant to section 6(c) of the Tuna Conventions Act of 1950, as amended, but that such fish were caught in the waters of _____

(Identify area or areas in which fish were taken) _____ by vessels subject to the jurisdiction of _____ (Country)

and that none of the said fish was taken in any part of the eastern Pacific Ocean subject to conservation regulations pursuant to recommendations of the Inter-American Tropical Tuna Commission.

(Signature)

(Title)

(Address)

[This certificate must be accompanied by a certificate of authentication executed by a consular officer or consular agent of the United States]

§ 281.8 Removal of import restrictions.

Upon a determination by the Bureau Director that the conditions no longer exist which warranted the imposition of import restrictions against the country named in the finding published pursuant to section 281.6, the Bureau Director, with the approval of the Secretary of the Interior, shall publish a finding to such effect in the FEDERAL REGISTER. Effective upon the date of publication of such finding, the prior existing import restrictions against the country designated therein shall terminate: *Provided*, That for a period of one year from such date of publication every shipment of fish in any form of the species subject to regulation or under investigation by the Commission shall continue to be denied entry unless the shipment is accompanied by a certification executed by an authorized official of the country of export and authenticated by a consular officer or consular agent of

the United States, certifying that no portion of the shipment is comprised of fish which are of species under regulation and which were prohibited from entry under the prior existing import restrictions.



Department of the Treasury

COAST GUARD

PLANS FOR FULL-TIME FISHERIES PATROL VESSEL FOR GEORGES BANK:

Plans for a full-time Coast Guard patrol vessel for the Georges Bank fishing grounds off the New England coast were made public in a letter from the Department of State to Senator Saltonstall. Provision for the fisheries patrol vessel is included in the Coast Guard's 1964 fiscal year plans.

At present Coast Guard search and rescue patrols off the New England coast are being used for fisheries patrols when they are not engaged in their primary mission.



Eighty-Seventh Congress (Second Session)

CONGRESS ADJOURNS: The Eighty-Seventh Congress adjourned "sine die" or finally on Oct. 13, 1962, and a number of bills of interest to fisheries ended up as "unfinished business." These bills will have to be re-introduced in the 88th Congress next year if they are to receive consideration, since all bills not completed during the Second Session of this Congress are "dead" and do not carry over to the Eighty-Eighth Congress, which will convene in January 1963. Also, this means that bills if and when re-introduced must go through the entire process of committee consideration, hearings, etc. Before adjourning, the House and the Senate on October 13



adopted H. J. Res. 907, fixing the time of assembly of the 88th Congress as January 9, 1963. Ordinarily the next Congress would have convened on January 3, 1963.

AMERICAN SAMOA INCLUDED IN CERTAIN LAWS: Public Law 87-688, 87th Congress (H. R. 10062), Sept. 25, 1962, an act to extend the application of certain laws to American Samoa. Authorizes the Secretary of the Interior to request Federal departments, corporations, or agencies to extend, without reimbursement, scientific and technical assistance to promote the welfare of the territory. Examples of the sorts of technical assistance which may be called for from time to time include revision of Samoa's tax structure, education, agricultural and fisheries production and marketing, harbor improvement, public utilities, and land planning and zoning. There is a limitation of an aggregate of \$150,000 in any one fiscal year.

FISHERY MARKETING ACT AMENDMENT: Senator Warren G. Magnuson (D.-Wash.), Chairman of the Senate Committee on Commerce, announced on Oct. 3 that the Merchant Marine and Fisheries Subcommittee will hold public hearings in mid-October in Seattle and in four Alaska communities on S. 3093, sponsored by him and Senator E. L. (Bob) Bartlett of Alaska. Senator Bartlett will chair the hearings.

The measure, introduced as part of the Senate Commerce Committee's study on the subject, would amend the Fisheries Marketing Act of 1934, an act originally designed to provide fishermen as primary producers with the right of self-association for cooperative improvements of their conditions. The amendment seeks to bring the Marketing Act up to date by relating it to the practical problems that presently cloud the rights of fishermen to associate themselves together, whether in unions or cooperatives, and collectively bargain for a fair return on the fish harvested by their labors at sea.

S. 3093 would make clear that fishermen's organizations, regardless of their technical legal status, have a voice in the ex-vessel sale of fish or other aquatic products on which the livelihood of their members depends.

In introducing the measure last April, Senator Magnuson said he did so to give the industry a chance to study the proposal. "What is needed," he said, "above all is to bring together in a comprehensive record the facts pertinent to the problems we are striving to solve with this legislation. To guide us we need the ideas and mature judgments of the producers, the dealers, the cannerymen, and all others who make up the U. S. fishery. Out of such an approach, I am sure, will emerge a solution that will help us to legislate a foundation for stable relationships between the several divisions of our industry."

Senator Bartlett held the first hearing in Seattle, Wash., on October 15. This was followed by hearings in Ketchikan on October 16, Petersburg on October 17, Anchorage on October 18, and Dillingham, Alaska, on October 19. It is expected that November hearings will be held in San Pedro, Calif., Senator Magnuson said.

FISHERY PROBLEMS: The appendix of the Congressional Record of Oct. 9, 1962 (pp. A7483-84) reported on the extension of remarks by Congressman Kirwan, who inserted an article by Senator Benjamin

Smith of Massachusetts, "Our Fishing Fleet Comes in Fifth--Using New Techniques of Catching and Processing, Other Nations Have Far Surpassed Us in This Vital Field--A Senator Outlines What Can Be Done About It." Senator Smith in his article points out that the United States fishing fleet comes in fifth among the world's fishing fleets. He also points out that the efficiency of foreign fishing fleets, such as Japanese and Soviet, have increased in recent years. That as late as 1948 the United States supplied nearly 13 percent of the world's fishery production. Now we are down to 7.4 percent. The Senator proposes expanding research in finding, catching, and processing fish; additional research vessels for the U. S. Bureau of Commercial Fisheries; Government matching grant or loan program to help the fishing industry in key areas; a matching fund program to help the State commercial fishery agencies; a loan program to help the processors; Government and industry cooperation in developing new products and marketing techniques. Senator Smith also states, "... We have a great opportunity in the fishing field. We can begin today to rehabilitate our fishermen and regain our rightful place among the nations of the world. The benefits to our economy and our foreign policy will greatly exceed the costs. I hope that both the Government and industry will see the truth in this and make the effort necessary to save the American fishing industry."

FISH PROTEIN CONCENTRATE: Fish Protein Concentrate (Hearings before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 87th Congress, 2nd Session), 133 pp., printed. Contains hearings held on Aug. 8 & 9, 1962, on H. R. 9101, H. R. 9102, H. R. 9331, H. R. 10587, to amend clause (3) of section 402 (a) of the Federal Food, Drug, and Cosmetic Act. Bills would amend chapter 4--Food--section 402 (Adulterated Food) of the Federal Food, Drug, and Cosmetic Act as amended which spells out what makes the food adulterated. It would provide that processed seafood products can be produced from whole fish. Clause (3) of section 402 (a) of the Federal Food, Drug, and Cosmetic Act is amended by inserting: "... but no processed seafood product shall be deemed to consist of any such substance or to be otherwise unfit for food because such processed seafood product is derived from whole fish, provided such product is processed under sanitary conditions and after processing is nutritious and in no manner harmful to the health of consumers thereof." Also contains the reports of various Government agencies, testimony given by Congressmen, industry, and Government agencies, and additional information and communications submitted to the Committee.

FISHERY RESOURCES INTERNATIONAL CONFERENCE: S. Rept. 2112, International Fisheries Conference (Sept. 20, 1962, a report from the Committee on Commerce, U. S. Senate, 87th Congress, 2nd Session to accompany S. Res. 392), 7 pp., printed. Resolution is to express the sense of the Senate on an International Conference on the Conservation of Fishery Resources. The Committee reported favorably and recommended that the resolution be adopted. The resolution is of great significance and importance because of an amendment to the Trade Expansion Act of 1962 (H. R. 11970). The text of the amendment is as follows: "Upon the convocation of a conference on the use or conservation of international fishery resources, the President shall, by all appropriate means at his disposal, seek to persuade countries whose domestic fishing practices or policies affect such resources, to engage in negotiations

in good faith relating to the use or conservation of such resources. If, after such efforts by the President and other countries which have agreed to engage in such negotiations, any other country whose conservation practices or policies affect the interests of the United States and such other countries has in the judgment of the President, failed or refused to engage in such negotiations in good faith, the President may, if he is satisfied that such action is likely to be effective in inducing such country to engage in such negotiations in good faith, increase the rate of duty on any fish in any form imported from such country into the United States for such time as he deems necessary, to a rate not more than 50 per centum above the rate existing on July 1, 1934." S. Res. 392, briefly summarizes the reasons why it is important that an international conference be held to consider conservation of fishery resources. The resolution states:

"Whereas the increasing world population and the consequent growing demand for animal protein, together with industrial and economic development in all parts of the world, have resulted in remarkable expansion of world fishing effort; and

"Whereas technological developments have vastly improved man's ability to harvest the living resources of the sea; and

"Whereas estuarine fishery resources, to which little attention has been devoted on a worldwide basis in spite of their increasing importance as a source of human food, present unique scientific and technical problems; and

"Whereas these developments raise new technical and scientific conservation problems the solution of which would best be approached on a worldwide basis; Now, therefore, be it

"Resolved, That it is the sense of the Senate that the President should propose an International Conference on the Conservation of Fishery Resources to consider the technical, economic, and scientific problems relating to the conservation, utilization, and regulation of living marine resources in the high seas and estuarine waters of the world, and that government, industrial, scientific, and technical participation in such Conference on as wide a basis as may be practicable should be encouraged." The report also contains a short explanation of the world food problem and the United States fishing industry.

The Senate on Sept. 20, 1962, adopted S. Res. 392. Since this is a Senate resolution no House action is required.

FOOD AND AGRICULTURE ACT OF 1962: H. Rept. 2385, Food and Agriculture Act of 1962 (Sept. 17, 1962, Conference Report from the Committee of Conference, House of Representatives, 87th Congress, 2nd Session, to accompany H. R. 12391, 37 pp., printed. To improve and protect farm income, to reduce costs of farm programs to the Federal Government, to reduce the Federal Government's excessive stocks of agricultural commodities, to maintain reasonable and stable prices of agricultural commodities and products to consumers, to provide adequate supplies of agricultural commodities for domestic and foreign needs, to conserve natural resources, and for other purposes. The Committee of Conference recommended passage to their respective Houses. The Committee retained the amendment to Sec. 343 which is as follows: "As

used in this title (1) the term 'farmers' shall be deemed to include persons who are engaged in, or who, with assistance afforded under this title, intend to engage in fish farming, and (2) the term 'farming' shall be deemed to include fish farming." Contains various other amendments agreed to and the statement of Managers on the part of the House.

INDEPENDENT OFFICE APPROPRIATIONS: Independent Offices Appropriations, 1963 (Hearings before the Subcommittee of the Committee on Appropriations, U. S. Senate, 87th Congress, 2nd Session, on H. R. 12711, making appropriations for sundry independent executive bureaus, boards, commissions, corporations, agencies, and offices, for the fiscal year ending June 30, 1963, and for other purposes), 1,459 pp., printed. Contains hearing held on Aug. 6, 1962; includes, among others, testimony given on behalf of the Office of Science and Technology; National Science Foundation and various agencies. Under the National Science Foundation mention was made of oceanographic research, its vessels and facilities.

The President on Oct. 3, 1962, signed H. R. 12711 (P. L. 87-741), making appropriations for sundry independent executive bureaus, boards, commissions, corporations, agencies, and offices for the fiscal year ending June 30, 1963, and for other purposes. Included are funds for the Office of Science and Technology, (\$750,000).

MAINE LOBSTERMAN STATUE: H. Rept. 2445, Making Provisions for a Statue to "The Maine Lobsterman" in the "New Southwest," Washington (Sept. 20, 1962, a report from the Committee on the District of Columbia, House of Representatives, 87th Congress, 2nd Session, to accompany H. Res. 799), 1 p., printed. The Committee reported favorably and recommended passage. Contains the purpose of the resolution.

MEDICAL CARE FOR VESSEL PERSONNEL AND OWNERS: Medical Care for Fishing Boat Owners (Hearing before a Subcommittee of the Committee on Interstate and Foreign Commerce, House of Representatives, 87th Congress, 2nd Session), 50 pp., printed. Contains hearings held on Aug. 13, 1962, on H. R. 2262, to amend section 322 of the Public Health Service Act to permit certain owners of fishing boats to receive medical care and hospitalization without charge at hospitals of the Public Health Service; H. R. 3797, H. R. 8029, H. R. 10921, H. R. 11920, to provide medical care for certain persons engaged on board a vessel in the care, preservation, or navigation of such vessel; and S. 367, to provide medical care for certain persons engaged on board a vessel in the care, preservation, or navigation of such vessel. Also contains, the reports of various Federal agencies, statements submitted by industry people and Government agencies and communications submitted to the Committee.

NATIONAL FISHERIES CENTER AND AQUARIUM: The House Committee on Rules, Oct. 1, 1962, granted a rule to take H. R. 8181 (to authorize the construction of a National Fisheries Center and Aquarium in D. C., and to provide for its operation) from the Speaker's table to consider Senate amendments thereto. Sen. Delaney for the Committee on Rules, filed a privileged resolution (H. Res. 822, Rept. No. 2503) which was referred to the House Calendar.

The House on Oct. 2, 1962, adopted H. Res. 822, providing for House agreement to Senate amendments to

H. R. 8181. This action cleared the legislation for Presidential action. The Senate passed the bill on Sept. 21, 1962.

The President on Oct. 9, 1962, signed H. R. 8181 (P. L. 87-758).

The Speaker of the House on Oct. 13, 1962, appointed Congressmen Kirwan and Jensen to membership on the National Fisheries Center and Aquarium Advisory Board.

NETTING IMPORTS FOR RESEARCH: The Senate Sept. 28, 1962, adopted the conference report (H. Rept. 2413) on H. R. 12180, to extend for a temporary period the existing provisions of law relating to the free importation of personal and household effects brought into the United States under Government orders. The bill as adopted includes an amendment (the text of S. 1814) providing for free importation of monofilament gill nets for use in fish sampling.

The President on Oct. 10, 1962, signed H. R. 12180 (P. L. 87-790).

OCEANOGRAPHIC RESEARCH PROGRAM: The House on Oct. 1, 1962, adopted the conference report (H. Rept. 2493) on S. 901, to advance the marine sciences, to establish a comprehensive 10-year program of oceanographic research and surveys, to promote commerce and navigation, to secure the national defense, to expand ocean, coastal, and Great Lakes resources, to authorize the construction of research and survey ships and laboratory facilities, to expedite oceanographic instrumentation, to assure systematic studies of effects of radioactive materials in marine environments, to enhance the public health and general welfare, and for other purposes. Sent to the Senate for approval of conference report.

OCEANOGRAPHIC RESEARCH PROGRAM: H. Rept. 2493, Oceanographic Act of 1962 (Sept. 27, 1962, conference report of the Committee of Conference, House of Representatives, 87th Congress, 2nd Session, to accompany S. 901), 6 pp., printed. To advance the marine sciences, to establish a comprehensive 10-year program of oceanographic research and surveys, to promote commerce and navigation, to secure the national defense, to expand ocean, coastal, and Great Lakes resources, to authorize the construction of research and survey ships and laboratory facilities, to expedite oceanographic instrumentation, to assure systematic studies of effects of radioactive materials in marine environments, to enhance the public health and general welfare, and for other purposes. The Committee recommended to their respective Houses that the bill as reported in the report be adopted. Contains the amendment, and statement of the managers on the part of the House.

The Senate on Oct. 3, 1962, adopted the conference report (H. Rept. 2493) on S. 901. It is to be cited as the "Oceanographic Act of 1962." This action cleared the bill for the President's signature. The bill as agreed to by the conferees contains no authorization for funds, for construction of ships, for purchase of instruments, or for research. It just declares as a policy of the United States to develop, encourage, and maintain a long-range national program in oceanography, to be participated in by all qualified persons, organizations, institutions, agencies or entities. To make such a policy work, the Office of Science and Technology is directed to advance or develop a national program of oceanography, to issue a statement of national goals, methods of achieving them, and how the various agencies of Government will fit in to the over-all plan.

On Oct. 17, 1962, the 10-day period for Presidential action on S. 901 expired. The failure of the President to sign this legislation within the 10 days after Congress adjourned constitutes a pocket veto.

OYSTER PLANTERS DISASTER LOANS: Emergency Loans to Oyster Planters (Hearing before a Subcommittee on the Committee on Agriculture and Forestry, U. S. Senate, 87th Congress, 2nd Session, on H. R. 946, to extend to oyster planters the benefits of the provisions of the present law which provides for production disaster loans for farmers and stockmen, July 9, 1962), 37 pp., printed. Contains the testimony from state and Federal agencies and industry people; reports from various Government agencies and congressmen; and an excerpt from the House report on the bill. Would amend the Consolidated Farmers Home Administration Act of 1961 so that it will include oyster planters as well as farmers for the purposes of obtaining an emergency loan during disaster periods.

The Senate, Oct. 1, 1962, received from the Committee on Agriculture and Forestry, without amendment a report (S. Rept. 2219) on H. R. 946, to extend to oyster planters the benefits of the provisions of the present law which provide for production disaster loans for farmers and stockmen. Would provide supplementary financial assistance to oyster producers in distressed oyster production areas.

S. Rept. 2219, **Emergency Loans to Oyster Planters** (Oct. 1, 1962, a report from the Committee on Agriculture and Forestry, U. S. Senate, 87th Congress, 2nd Session, to accompany H. R. 946), 6 pp., printed. The Committee favorably reported the bill and recommended passage. Contains the purpose; need for the legislation; costs; committee amendment; departmental recommendations and changes in existing law.

The Senate on Oct. 2, 1962, passed H. R. 946. The House passed the bill on April 2, 1962; therefore the bill was cleared for the President's signature.

The President on Oct. 15, 1962, signed H. R. 946 (P. L. 87-832).

NORTH PACIFIC FISHERIES PROBLEMS: On Oct. 4, 1962, Mr. Bartlett (Alaska) received the consent of the Senate to have printed in the *Congressional Record* a paper by Edward W. Allen, a Seattle attorney who is chairman of the International North Pacific Fisheries Commission. Mr. Allen's paper discusses the problems of conserving stocks of halibut and salmon in the North Pacific. His paper points out that different methods of conservation are needed for different species of fish. It notes that both the salmon and halibut fisheries of the Pacific coast of North America have been exclusively developed and subjected to scientific research and public regulation by the United States and Canada. The paper traces the interest of Japanese fishermen in the Bering Sea, which began in the 1930's and has continued to grow. It lists past actions to conserve North Pacific stocks of salmon and halibut such as the action of Secretary of State Cordell Hull in 1937, President Truman's fishery proclamation of Sept. 28, 1945, and the negotiations leading to the Tripartite (Canada, Japan, United States) North Pacific Fisheries Convention. The present activities of Japanese and Russian fishermen in the Bering Sea and their affect on salmon and halibut stocks are mentioned. The doctrine of "historic rights" in certain fisheries is contrasted with the idea of "freedom of the seas." It is pointed out that at the Geneva Conference on the Law of the

Sea in 1958, a substantial majority of the delegates endorsed the resolution embodying the principle of abstention. After noting the opposition of part of the Japanese fishing industry to continuation of the present Tripartite North Pacific Fisheries Convention, Allen summarizes his ideas with the statement: "If international law is to survive it must justify its usefulness to humanity and it must be sufficiently flexible to deal with realities. There are two distinct types of ocean fishery. One is unrestricted exploitation. The other is conservation regulated."

The appendix of the *Congressional Record* of Oct. 6, 1962 (pp. A7361-62) reported on extension of remarks by Congressman Pelly on the sound conservation principles that must be the basis of United States fisheries policy at the forthcoming November meeting of the International North Pacific Fisheries Commission, when discussions of fisheries problems of common interest with Canada and Japan take place. Included is a letter from the secretary-treasurer of Alaska's Fishermen's Union to the Under Secretary of State George Ball urging a realistic policy based on the merits of the fishery problem.

PACIFIC MARINE FISHERIES COMPACT: H. Rept. 2454, Amendment to Pacific Marine Fisheries Compact (Sept. 21, 1962, a report from the Committee on Merchant Marine and Fisheries, House of Representatives, 87th Congress, 2nd Session, to accompany S. 3431), 6 pp., printed. This bill would amend the Pacific Marine Fisheries Compact as to the participation of certain additional States in such compact. The Committee favorably reported the bill and recommended passage. Contains the purpose of the bill, background of the legislation, departmental reports, and changes in existing law.

The House Oct. 1, 1962, passed S. 3431, to consent to the amendment of the Pacific Marine Fisheries Compact and to the participation of certain additional States in such compact in accordance with the terms of such amendment. The change consists of an addition to the existing compact which provides in part: "The States of Alaska or Hawaii, or any State having rivers or streams tributary to the Pacific Ocean may become a contracting State by enactment of the Pacific Marine Fisheries compact." The Senate passed the bill on July 18, 1962, therefore the bill was cleared for the President's signature.

The President on Oct. 9, 1962, signed S. 3431 (P. L. 87-766).

POTOMAC RIVER COMPACT (MD. & VA.) OF 1958: The President on Oct. 10, 1962, signed H. J. Res. 659 (P. L. 87-783), granting consent of the Congress to a compact entered into between the State of Maryland and the Commonwealth of Virginia for the creation of the Potomac River Compact of 1958. Gives Maryland and Virginia permission to set up a Potomac River Fisheries Commission. It would regulate through three members from each State the taking of fish and shellfish from the Potomac River between the District of Columbia line and Chesapeake Bay. Research, regulation of fisheries, an oyster inspection fee and licensing would be within the power of the new commission. The compact succeeds an obsolete agreement of 1785, which has been disputed by the States.

PRICE-QUALITY STABILIZATION: Quality Stabilization (Hearings before a Subcommittee of the Committee on Commerce, United States Senate, 87th Congress, 2nd Session, on S. J. Res. 159, a joint resolution to a-

mend the Federal Trade Commission Act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to conform, define, and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes), 477 pp., printed. Reports on hearings held April 9, 19, 23, May 24 and 25, 1962; contains statements received from various Federal agencies and industry people, and letters submitted to the Committee.

On Oct. 3, 1962, the House Committee on Rules reported (H. Rept. 2520) to the House a resolution (H. Res. 825) for consideration of H. J. Res. 636, to amend the Federal Trade Commission act, to promote quality and price stabilization, to define and restrain certain unfair methods of distribution and to confirm, define, and equalize the rights of producers and resellers in the distribution of goods identified by distinguishing brands, names, or trademarks, and for other purposes; without amendment. Referred to the House Calendar.

SALMON IMPORT RESTRICTIONS: The House Oct. 1, 1962, received a report (H. Rept. 2498) from the Committee on Merchant Marine and Fisheries on H. R. 9547, to facilitate the application and operation of the Fish and Wildlife Act of 1956 and for other purposes. Would prohibit the import of salmon products derived from fish caught by nationals of any country that permits fishing for salmon by gill nets on the high seas at times and places where occur large quantities of immature salmon of North American origin. Referred to the Committee of the Whole House on the State of the Union.

H. Rept. 2498, *Facilitating the Application and Operation of the Fish and Wildlife Act of 1956* (Oct. 1, 1962, a report from the Committee on Merchant Marine and Fisheries, House of Representatives, 87th Congress, 2nd Session, to accompany H. R. 9547, to facilitate the application and operation of the Fish and Wildlife Act of 1956, and for other purposes), 4 pp., printed. The Committee favorably reported the bill and recommended passage with amendment. Contains purpose of the bill, background of the legislation, cost of the legislation, changes in existing law, and departmental reports.

SPORT FISH RESEARCH: Fish and Wildlife Legislation (Hearings before a Subcommittee of the Committee on Commerce, U. S. Senate, 87th Congress, 2nd Session), 109 pp., printed. Contains hearings held July 9 and 18, 1962, on S. 1642, to authorize and direct the Secretary of the Interior to conduct studies of the genetics of sport fishes and to carry out selective breeding of such fishes to develop strains with inherent attributes valuable in programs of research, fish hatchery production, and management of recreational fishery resources; reports of various Federal agencies; testimony of various State and Federal agencies, U. S. Senators and industry organizations; and statements submitted to the committee.

STATE DEPARTMENT APPROPRIATIONS: Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies Appropriations, 1963 (Hearings before the Subcommittee of the Committee on Appropriations, U. S. Senate, 87th Congress, Second Session, to accompany H. R. 12580), 776 pp., printed. Contains hearings held on making appropriations for the Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies for the fiscal year

ending June 30, 1963. Included in the appropriations for the Department of State are funds for the international fisheries commissions. Testimony was heard from various personnel from the State Department, and letters and communications were submitted to the Committee.

The Subcommittees of the Senate Committee on Appropriations, in executive session, Sept. 28, 1962, marked up and approved for full committee consideration with amendments H. R. 12580, making appropriations for the Departments of State, Justice, and Commerce, the Judiciary, and related agencies for fiscal year 1963. Included in the appropriations for the Department of State are funds for the international fisheries commissions.

The Senate received from the Committee on Appropriations on Oct. 1, 1962, a favorable report (S. Rept. 2226) on H. R. 12580 (with amendments).

S. Rept. 2226, *Departments of State, Justice, and Commerce, the Judiciary, and Related Agencies Appropriation Bill, 1963* (Oct. 1, 1962, a report from Committee on Appropriations, U. S. Senate, 87th Congress, 2nd Session, to accompany H. R. 12580), 38 pp., printed. The Committee under the Department of State appropriations recommended \$2,082,000 for international fisheries commissions. This is an increase of \$172,000 over the House bill and the 1962 appropriation, but \$83,000 under the 1963 budget estimate. The funds would enable the United States to meet its share of expenses of the eight international fisheries commissions.

The Senate passed with amendments on Oct. 3, 1962, H. R. 12580. Senate insisted on its amendments, asked for conference with House, and appointed conferees. This bill was passed by the House on July 20, 1962. On Oct. 3, the House disagreed to Senate amendments, agreed to conference requested by Senate, and appointed conferees.

Conferees, in executive session, on Oct. 5, 1962, agreed to file a conference report on the differences between the Senate- and House-passed H. R. 12580.

The House on Oct. 8, 1962, received the conference report (H. Rept. 2546) on H. R. 12580.

H. Rept. 2546, *Departments of State, Justice, and Commerce, the Judiciary and Related Agencies Appropriation Bill, 1963* (Oct. 8, 1962, a report from the Committee of Conference, House of Representatives, 87th Congress, 2nd Session to accompany H. R. 12580), 8 pp., printed. The Committee under the Department of State appropriations recommended \$1,910,000 for international fisheries commissions as proposed by the House instead of \$2,082,000 as proposed by the Senate.

The Senate and the House on Oct. 10, 1962, adopted the conference report (H. Rept. 2546) on H. R. 12580. The Conference action agreed on \$1,910,000 appropriations for the international fisheries commissions, the same as the 1962 appropriations and the same as the 1963 House bill. This was less than the \$2,165,000 in the 1963 revised budget estimates and also less than the Senate version of the bill that had allowed \$2,082,000. The President on Oct. 18, 1962, signed H. R. 12580 (P. L. 87-843).

SUPPLEMENTAL APPROPRIATIONS 1963: Supplemental Appropriations for 1963 (Hearings before the

Subcommittee of the Committee on Appropriations, House of Representatives, 87th Congress, 2nd Session), 515 pp., printed. Contains hearings held on proposed supplemental appropriations for the fiscal year 1963. Included are funds for the Bureau of Commercial Fisheries in the sum of \$500,000 to finance the development and perfection of commercial techniques for the production of fish protein concentrate. Also contains the statements of various Federal agencies and others as submitted to the Committee.

H. R. 13290 (Thomas) introduced in the House on Oct. 1, 1962, making supplemental appropriations for the fiscal year ending June 30, 1963, and for other purposes. The Committee on the same date reported the bill favorably (H. Rept. 2507); referred to the Committee of the Whole House on the State of the Union. Included in the appropriations for the Department of the Interior was an allocation of \$500,000 for the Bureau of Commercial Fisheries, for research and development of processes to produce a concentrated protein from fish. The Committee report (H. Rept. 2507) recommended only \$375,000 instead of the \$500,000 asked by the President in his communication (H. Doc. 514). The House on Oct. 3, 1962, passed the bill.

The Senate Committee on Appropriations on Oct. 1, 1962, started hearings on the proposed supplemental appropriations for fiscal year 1963. Testimony was heard from various Interior Department personnel including a representative from the Bureau of Commercial Fisheries and other Federal agencies. The Senate on Oct. 4, 1962, received the bill (H. R. 13290) from the House; referred to the Committee on Appropriations. The Committee favorably reported the bill to the Senate, Oct. 8, 1962 (S. Rept. 2285). The Senate Committee recommended an appropriation of \$500,000 for development and perfection of commercial techniques for the production of fish protein concentrate. This is a matter of great importance to the fishing industry of the United States; and success in the program will result in a food supplement much needed throughout the world, reported the Committee. Although the House directed that \$125,000 of the requested amount be available from unallocated Saltonstall-Kennedy funds, such funds will not be available because of the impending employee pay increase. The Bureau will have to absorb the pay increase, and is not permitted to request additional funds to cover it. To use the Saltonstall-Kennedy funds, therefore, will mean a reduction in other current programs, pointed out the Committee.

H. Rept. 2507, Supplemental Appropriation Bill, 1963 (Oct. 1, 1962, report of the Committee on Appropriations, House of Representatives, 87th Congress, 2nd Session, to accompany H. R. 13290), 15 pp., printed. The Committee considered budget estimates totaling \$648,436,980 and is recommending for appropriation \$404,497,880. Included are funds for the Bureau of Commercial Fisheries--the Committee recommends an appropriation of \$375,000 for research and development of processes to produce a concentrated protein from fish. This amount together with the \$125,000 carryover and unallocated funds available under the permanent appropriation of customs duties on fishery products (Saltonstall-Kennedy Funds) will provide a total of \$500,000, the same as the requested amount, reported the Committee.

S. Rept. 2285, Supplemental Appropriation Bill, 1963 (Oct. 8, 1962, a report from the Committee on Appropriations, U. S. Senate, 87th Congress, 2nd Session, to accompany H. R. 13290), 32 pp., printed. The Commit-

tee recommended various amendments and recommended passage. The Committee restored to the Bureau of Commercial Fisheries the full amount requested--\$500,000--for the development and perfection of commercial techniques for the production of fish protein concentrate.

On Oct. 12, 1962, Congressman Thomas requested that the bill H. R. 13290, making supplemental appropriations for the fiscal year ending June 30, 1963, and for other purposes, be taken from the Speaker's table, that the House disagree to the Senate amendments and agree to the conference asked by the Senate. Congressman Cannon objected, therefore no action was taken. As a result, the bill is "dead" and will have to be re-introduced in the Eighty-Eighth Congress if it is to be considered.

TRADE EXPANSION ACT OF 1962: Trade Expansion Act of 1962 (Hearings before the Committee on Finance, U. S. Senate, 87th Congress, 2nd Session, on H. R. 11970, to promote the general welfare, foreign policy, and security of the United States through international trade agreements and through adjustment assistance to domestic industry, agriculture, and labor, and for other purposes), printed in 5 parts, Part I (July 23, 24, 25, and 26, 1962), 512 pp.; Part II (July 30, 31, August 1, 2, and 6, 1962), 533 pp.; Part III (August 7, 8, 9, and 10, 1962), 611 pp.; Part IV (August 13, 14, 15, and 16, 1962), 646 pp.; and Part V (Index to hearings), 13 pp. Contains a brief analysis of the Trade Expansion Act as passed by the House; text of the bill; departmental reports; testimony of the various Government officials and members of industry; and communications submitted to the Committee.

Foreign Trade (Hearings before the Committee on Commerce, U. S. Senate, 87th Congress, 2nd Session), 100 pp., printed. Contains hearings held on April 3, 4, and May 7, 1962, pertaining to the development of foreign trade by American exporters and problems of foreign trade in general; testimony of various Federal agencies and statements submitted to the Committee from industry. The Director of the Bureau of Commercial Fisheries in his testimony to the Committee stated that the Department of the Interior is encouraging the export of fishery products to its best ability. Some of the major highlights of his statement were: economic importance of exports to the United States fishing industry, some factors affecting U. S. fishery exports, current export promotion program, and expanded export promotion program.

On Sept. 28, 1962, the President sent to Congress a message proposing appropriations totaling \$10.2 million for expenses under the Act this fiscal year. Of the total, \$1,450,000 would be for trade adjustment assistance activities by the Commerce Department, \$3,741,000 for trade adjustment programs of the Labor Department, and \$5 million to provide funds for Small Business Administration loans to firms injured by import competition.

The House on Oct. 2, 1962, received from the Committee of Conference the report (H. Rept. 2518) on H. R. 11970.

The House and the Senate on Oct. 4, 1962, adopted the conference report (H. Rept. 2518) on H. R. 11970. The bill was cleared for the President's signature.

H. Rept. 2518, Trade Expansion Act of 1962 (Oct. 2, 1962, a report from the Committee of Conference, House of Representatives, 2nd Session, 87th Congress

to accompany H. R. 11970, 13 pp., printed. The Committee of Conference having reached agreement recommended to their respective Houses passage of the bill. Contains statement of the managers on the part of the House and the amendments.

On Oct. 11, 1962, the President signed H. R. 11970 (P.L. 87-794).

As enacted, the key provisions of the law are: (1) The President has authority to cut all tariffs as much as 50 percent in the next five years. (2) He has the power to eliminate tariffs as much as he wants to on products in which the United States and Western Europe account for most of the world trade. (3) He is empowered to negotiate tariff reductions on entire categories of commodities, instead of item-by-item as at present. (4) A new program of subsidies is established to serve as a substitute for tariff protection for workers and firms which would be hurt by actions taken under the legislation to reduce tariffs on the things they make. These companies, injured by foreign competition, could receive loans and workers, made idle under these circumstances, could receive cash payments as high as \$61 a week for as long as 78 weeks.

TRANSPORTATION BILLS: Proposed Amendments to Federal Transportation Laws (Hearings before the Committee on Commerce, U. S. Senate, 87th Congress, 2nd Session, on S. 3242, to provide for strengthening and improving the national transportation system, and for other purposes; and S. 3243, to exempt certain carriers from minimum rate regulation in the transportation of bulk commodities, agricultural and fishery products, and passengers, and for other purposes), Part 1, 224 pp., printed. Contains statements of Government witnesses, reports from Federal agencies, and the President's message "The Transportation System of our Nation."

TUNA CONVENTION ACT AMENDMENT: Conservation of Tropical Tuna (Hearings before the Subcommittee on Inter-American Affairs of the Committee on Foreign Affairs, House of Representatives, 87th Congress, 2nd Session), 108 pp., printed. Contains hearings held on Aug. 14, 28, and 30, 1962, on S. 2568, to amend the act of September 7, 1950, to extend the regulatory authority of the Federal and State agencies concerned under the terms of the Convention for the Establishment of an Inter-American Tropical Tuna Commission, signed at Washington, May 31, 1949, and for other purposes; testimony of representatives of the Bureau of Commercial Fisheries, State Department, and various industry associations; and statements and affidavits submitted to the Committee.

The House Oct. 1, 1962, passed with amendments S. 2568, to amend the act of Sept. 7, 1950, to extend the regulatory authority of the Federal and State agencies concerned under the terms of the Convention for the Establishment of an Inter-American Tropical Tuna Commission signed at Washington May 31, 1949, and for other purposes. Would provide for the issuance and enforcement of Federal regulations to carry out recommendations of the Commission for the conservation of tuna (especially yellowfin) resources in the eastern Pacific.

The Senate on Oct. 2, 1962, concurred with the House amendments to S. 2568. The House passed the bill on Oct. 1, 1962.

On Oct. 15, 1962, the President signed S. 2568 (P.L. 87-814).



Public Law 87-814
87th Congress, S. 2568
October 15, 1962

An Act

76 STAT. 923.

To amend the Act of September 7, 1950, to extend the regulatory authority of the Federal and State agencies concerned under the terms of the Convention for the Establishment of an Inter-American Tropical Tuna Commission, signed at Washington May 31, 1949, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 2 of the Tuna Convention Act entitled "Tuna Conventions Act of 1950" (16 U.S.C. 951) is amended by repealing subsection (e) in its entirety and substituting therefor a new subsection (e) as follows:

"(e) 'United States' shall include all areas under the sovereignty of the United States, the Trust Territory of the Pacific Islands, and the Canal Zone."

Sec. 2. Section 2 of the Act entitled "Tuna Conventions Act of 1950" (16 U.S.C. 955) is amended by striking out the phrase "head of the enforcement agency" where it appears once each in subsections (a) and (b) and inserting in lieu thereof in both places the term "Secretary of the Interior," and by adding a new subsection (c) immediately following subsection (b), as follows:

"(c) Regulations required to carry out recommendations of the Regulations commission made pursuant to paragraph 5 of article II of the Convention for the Establishment of an Inter-American Tropical Tuna Commission shall be promulgated as hereinafter provided by the Secretary of the Interior upon approval of such recommendations by the Secretary of State and the Secretary of the Interior. The Secretary Publication in the Federal Register shall be accompanied by a statement of the general notice of proposed rulemaking and shall afford interested persons an opportunity to participate in the rulemaking through (1) submission of written data, views, or arguments, and (2) oral presentation at a public hearing. Such regulations shall be published in the Federal Register and shall be accompanied by a statement of the considerations involved in the issuance of the regulations. After publication in the Federal Register such regulations shall be applicable to all vessels and persons subject to the jurisdiction of the United States on such date as the Secretary of the Interior shall prescribe, but in no event prior to an agreed date for the application by all countries whose vessels engage in fishing for species covered by the convention in the regulatory area on a meaningful scale, in terms of effect upon the success of the conservation program, of effective measures for the implementation of the commission's recommendations applicable to all vessels and persons subject to their respective jurisdictions. The Secretary of the Interior shall suspend at any time the application of any such regulations when, after consultation with the Secretary of State and the United States Commissioners, he determines that foreign fishing operations in the regulatory area are such as to constitute a serious threat to the achievement of the objectives of the commission's recommendations. The regulations thus promulgated may include the selection for regulation of one or more of the species covered by the convention; the division of the convention waters into areas; the establishment of one or more open or closed seasons as to such area; the limitation of the size of the fish and quantity of the catch which may be taken from each area within any season during which fishing is allowed; the limitation or prohibition of the incidental catch of a regulated species which may be retained, taken, possessed, or landed by vessels or persons fishing for other species of fish; the requiring of such clearance certificates for vessels as may be necessary to carry out the purposes of the convention and this Act; and such other measures incidental thereto as the Secretary of the Interior may

76 STAT. 924.

deem necessary to implement the recommendations of the commission: Provided, That upon the promulgation of any such regulations the Secretary of the Interior shall promulgate additional regulations, with the concurrence of the Secretary of State, which shall become effective simultaneously with the application of the regulations hereinafter referred to (1) to prohibit the entry into the United States, from any country when the vessels of such country are being used in the conduct of fishing operations in the regulatory area in such manner or in such circumstances as would tend to diminish the effectiveness of the conservation recommendations of the commission, of fish in any form of those species which are subject to regulation pursuant to a recommendation of the commission and which were taken from the regulatory area by vessels other than those of such country in such manner or in such circumstances as would tend to diminish the effectiveness of the conservation recommendations of the commission. In the case of repeated and flagrant fishing operations in the regulatory area by the vessels of any country which seriously threaten the achievement of the objectives of the commission's recommendations, the Secretary of the Interior, with the concurrence of the Secretary of State, may, in his discretion, also prohibit the entry from such country of such other species of tuna, in any form, as may be under investigation by the commission and which were taken in the regulatory area. The aforesaid prohibitions shall continue until the Secretary of the Interior is satisfied that the condition warranting the prohibition no longer exists, except that all fish in any form of the species under regulation which were previously prohibited from entry shall continue to be prohibited from entry."

64 Stat. 779. Sec. 3. Section 7 of the Act entitled "Tuna Conventions Act of 1950" (16 U.S.C. 956) is amended by deleting the section in its entirety and substituting in lieu thereof the following:

"Sec. 7. Any person authorized to carry out enforcement activities under this Act and any person authorized by the commissions shall have power without warrant or other process, to inspect, at any reasonable time, catch returns, statistical records, or other reports as are required by regulations adopted pursuant to this Act to be made, kept, or furnished."

Violations. Sec. 4. Section 8 of the Act entitled "Tuna Conventions Act of 1950" (16 U.S.C. 957) is amended by deleting the section in its entirety and substituting in lieu thereof the following:

"Sec. 8. (a) It shall be unlawful for any master or other person in charge of a fishing vessel of the United States to engage in fishing in violation of any regulation adopted pursuant to section 6(c) of this Act, or for any person knowingly to ship, transport, purchase, sell, offer for sale, import, export, or have in custody, possession, or control any fish taken or retained in violation of such regulations."

"(b) It shall be unlawful for the master or any person in charge of any fishing vessel of the United States or any person on board such vessel to fail to make, keep, or furnish any catch returns, statistical records, or other reports as are required by regulations adopted pursuant to this Act to be made, kept, or furnished; or to fail to stop upon being hailed by a duly authorized official of the United States; or to refuse to permit the duly authorized officials of the United States or authorized officials of the commissions to board such vessel or inspect its catch, equipment, books, documents, records, or other articles or question the persons on board in accordance with the provisions of this Act, or the convention, as the case may be."

76 STAT. 925. (c) It shall be unlawful for any person to import, in violation of any regulation adopted pursuant to section 6(c) of this Act, from any country, any fish in any form of those species subject to regulation pursuant to a recommendation of the commission, or any tuna in any form not under regulation but under investigation by the commission, during the period such fish have been denied entry in accordance with the provisions of section 6(c) of this Act. In the case of any fish as described in this subsection offered for entry into the United States, the Secretary of the Interior shall require proof satisfactory to him that such fish is not ineligible for such entry under the terms of section 6(c) of this Act.

"(d) Any person violating any provision of subsection (a) of this section shall be fined not more than \$25,000, and for a subsequent violation of any provisions of said subsection (a) shall be fined not more than \$50,000."

"(e) Any person violating any provision of subsection (b) of this section shall be fined not more than \$1,000, and for a subsequent violation of any provision of subsection (b) shall be fined not more than \$5,000."

"(f) Any person violating any provision of subsection (c) of this section shall be fined not more than \$100,000."

"(g) All fish taken or retained in violation of subsection (a) of this section, or the monetary value thereof, may be forfeited."

"(h) All provisions of law relating to the seizure, judicial forfeiture, and condemnation of a cargo for violation of the customs laws, the disposition of such cargo or the proceeds from the sale thereof, and the remission or mitigation of such forfeitures shall apply to seizures and forfeitures incurred, or alleged to have been incurred, under the provisions of this Act, insofar as such provisions of law are applicable and not inconsistent with the provisions of this Act."

64 Stat. 779. Sec. 5. Section 10 of the Act entitled "Tuna Conventions Act of 1950" (16 U.S.C. 959) is amended by deleting the section in its entirety and substituting in lieu thereof the following:

Enforcement. "Sec. 10. (a) The judges of the United States district courts and United States commissioners may, within their respective jurisdictions, upon proper oath or affirmation showing probable cause, issue such warrants or other process as may be required for enforcement of this Act and the regulations issued pursuant thereto."

"(b) Enforcement of the provisions of this Act and the regulations issued pursuant thereto shall be the joint responsibility of the United States Coast Guard, the United States Department of the Interior, and the United States Bureau of Customs. In addition, the Secretary of the Interior may designate officers and employees of the States of the United States, of the Commonwealth of Puerto Rico, and of American Samoa to carry out enforcement activities hereunder. When so designated, such officers and employees are authorized to function as Federal law enforcement agents for these purposes."

"(c) Any person authorized to carry out enforcement activities hereunder shall have the power to execute any warrant or process issued by any officer or court of competent jurisdiction for the enforcement of this Act."

"(d) Such person so authorized shall have the power—

"(1) with or without a warrant or other process, to arrest any persons subject to the jurisdiction of the United States at any place within the jurisdiction of the United States committing in his presence or view a violation of this Act or the regulations issued thereunder;

"(2) with or without a warrant or other process, to search any vessel subject to the jurisdiction of the United States, and, if as a result of such search he has reasonable cause to believe that such

76 STAT. 925.

vessel or any person on board is engaging in operations in violation of the provisions of this Act or the regulations issued thereunder, then to arrest such person."

"(e) Such person so authorized may seize, whenever and wherever lawfully found, all fish taken or retained in violation of the provisions of this Act or the regulations issued pursuant thereto. Any fish so seized may be disposed of pursuant to the order of a court of competent jurisdiction, pursuant to the provisions of subsection (f) of this section or, if perishable, in a manner prescribed by regulations of the Secretary of the Interior."

62 Stat. 974. "(f) Notwithstanding the provisions of section 2464 of title 28 of the United States Code, when a warrant of arrest or other process in rem is issued in any cause under this section, the marshal or other officer shall stay the execution of such process, or discharge any fish seized if the process has been levied, on receiving from the claimant of the fish a bond or stipulation for the value of the property with sufficient surety to be approved by a judge of the district court having jurisdiction of the offense, conditioned to deliver the fish seized, if condemned, without impairment in value or, in the discretion of the court, to pay its equivalent value in money or otherwise to answer the decree of the court in such cause. Such bond or stipulation shall be returned to the court and judgment thereon against both the principal and sureties may be recovered in event of any breach of the conditions thereof as determined by the court. In the discretion of the accused, and subject to the direction of the court, the fish may be sold for not less than its reasonable market value and the proceeds of such sale placed in the registry of the court pending judgment in the case."

Sec. 6. Nothing in this Act shall be construed to amend or repeal the provisions of section 4311 of the Revised Statutes, as amended (46 U.S.C. 951).

The Department of the Interior has published in the Federal Register of Oct. 18, 1962, proposed regulations for the eastern Pacific yellowfin tuna fishery.

VESSEL REPLACEMENT PROBLEMS: The following statement by Mr. Tollefson (Washington) appeared in the Appendix of the Congressional Record, Oct. 8, 1962 (p. A7462):

"Mr. Speaker, according to the August 31 issue of the Fishing News, London, 14 German fishing trawlers are being scrapped. These vessels are termed 'obsolete.' They were built: one in 1953; one in 1951; seven in 1949; one in 1948; one in 1944; one reconditioned in 1941, and so forth."

"Unfortunately, we in the United States do not regard vessels of this age as obsolete. Many of our trawlers are twice as old as the oldest German trawler being scrapped. Still worse is the fact that we cannot scrap our old vessels for the simple reason that we cannot build new ones at double the cost our friends in Germany, Japan, and the rest of the world can build them. This constitutes one more urgent reason for Congress to enact legislation in the next Congress, if the United States is to continue in the business of producing fish. Otherwise, we shall yield the resources of the high seas to other nations who have forced us from the second highest producing nation to the fifth in a matter of 3 years."

VESSEL COLLISION LIABILITY: The Senate on Sept. 28, 1962, agreed to postpone indefinitely action on S. 2313, to unify apportionment of liability in cases of collision between vessels, and related casualties.

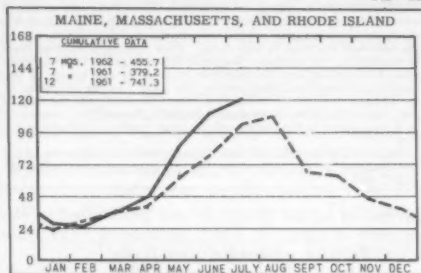
VESSEL OWNERS LIABILITY: The Senate on Sept. 28, 1962, agreed to postpone indefinitely action on S. 2314, to limit the liability of shipowners, and for other purposes.



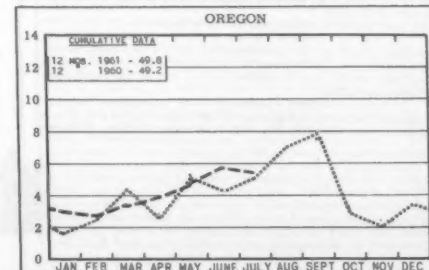
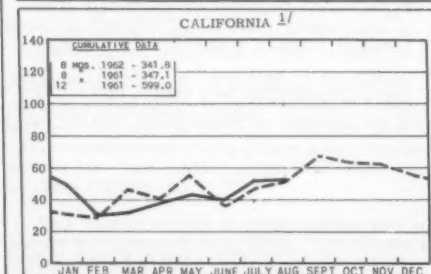
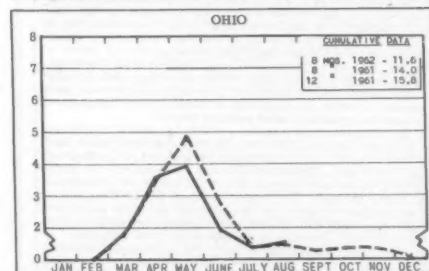
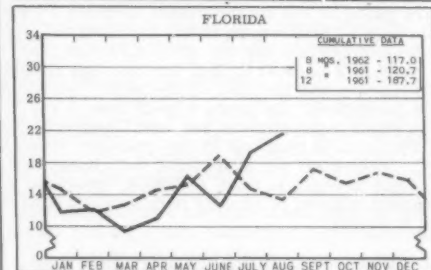
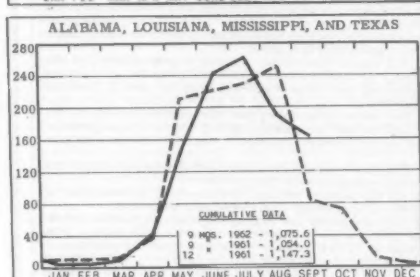
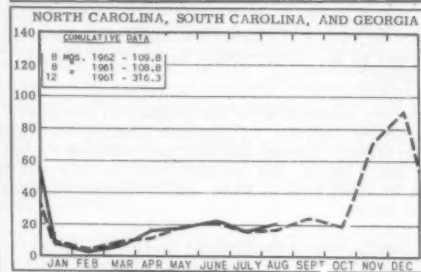
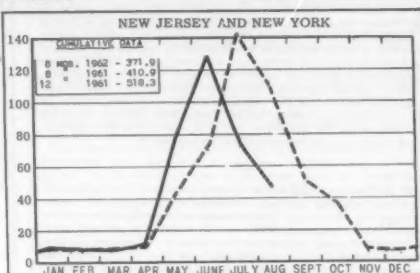
FISHERY INDICATORS

CHART 1 - FISHERY LANDINGS for SELECTED STATES

In Millions of Pounds



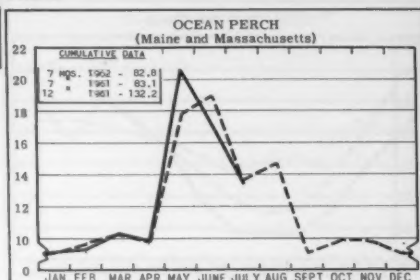
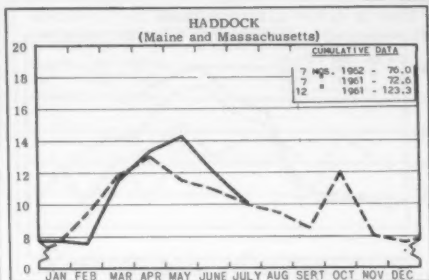
LEGEND
— 1962
--- 1961
..... 1960



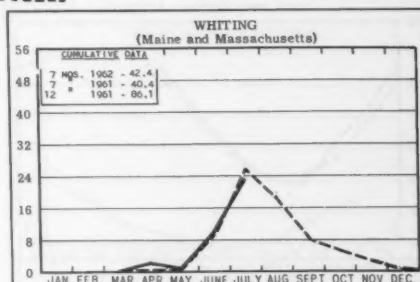
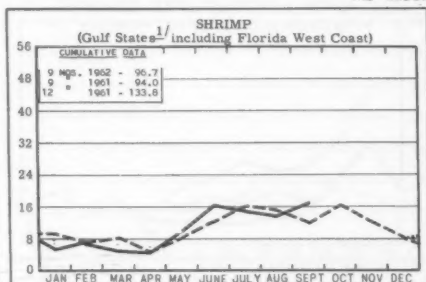
1/ ONLY PARTIAL--INCLUDING PRODUCTION OF MAJOR FISHERIES AND MARKET FISH LANDINGS AT PRINCIPAL PORTS.

CHART 2 - LANDINGS for SELECTED FISHERIES

In Millions of Pounds

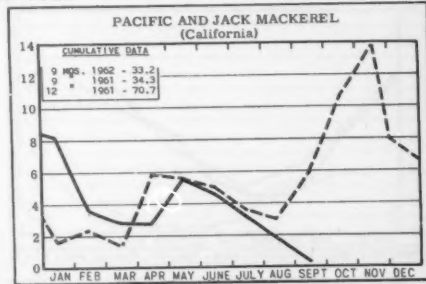
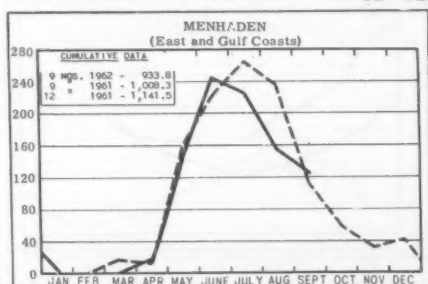


In Millions of Pounds



^{1/}LA. & ALA. DATA BASED ON LANDINGS AT PRINCIPAL PORTS AND ARE NOT COMPLETE.

In Thousands of Tons



In Thousands of Tons

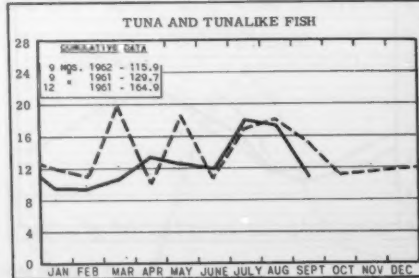
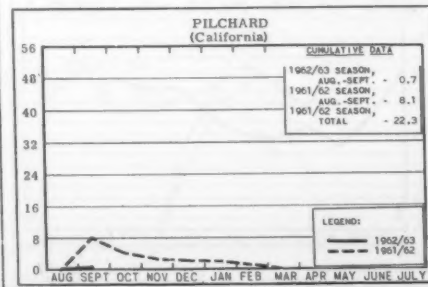
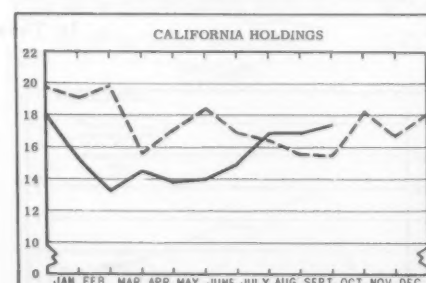
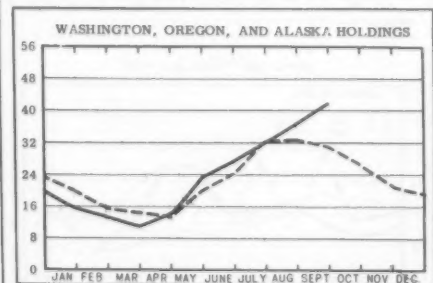
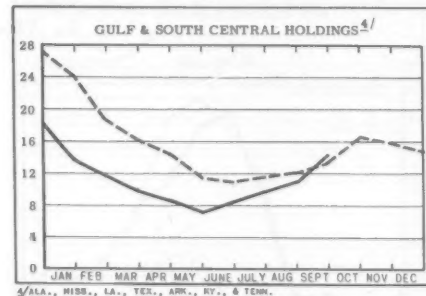
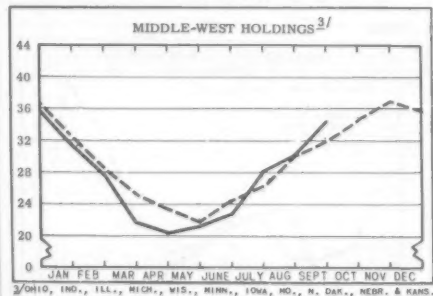
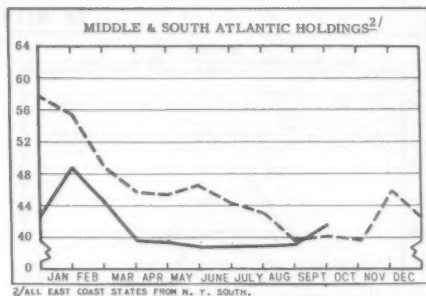
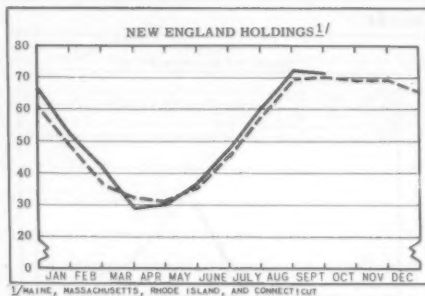
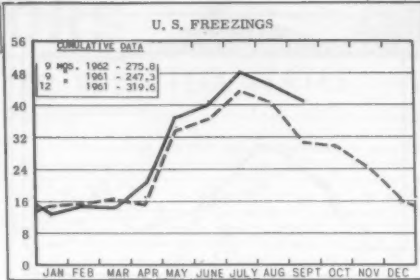
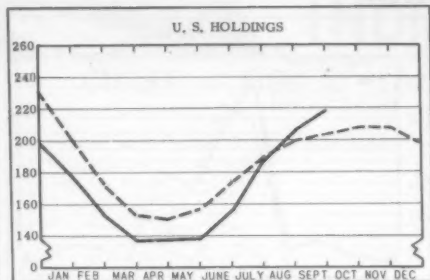


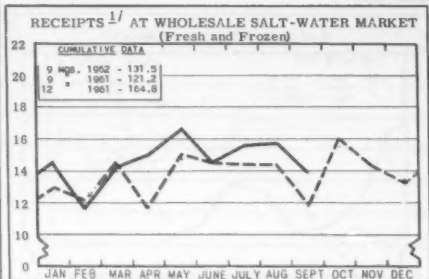
CHART 3 - COLD-STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS *

In Millions of Pounds



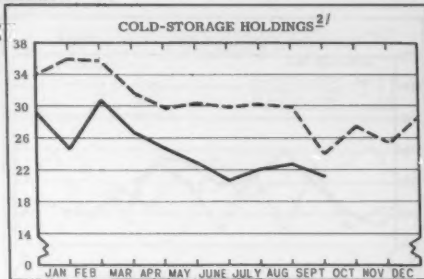
* Excludes salted, cured, and smoked products.

CHART 4 - RECEIPTS and COLD-STORAGE HOLDINGS of FISHERY PRODUCTS at PRINCIPAL DISTRIBUTION CENTERS In Millions of Pounds

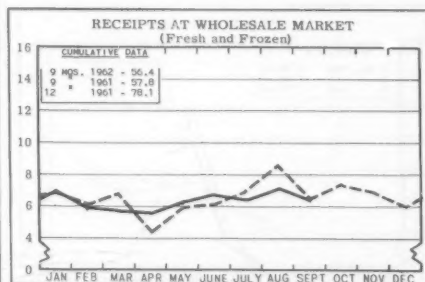


^{1/}INCLUDE TRUCK AND RAIL IMPORTS FROM CANADA AND DIRECT VESSEL LANDINGS AT NEW YORK CITY.

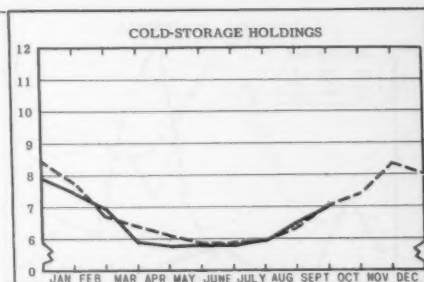
NEW YORK CITY



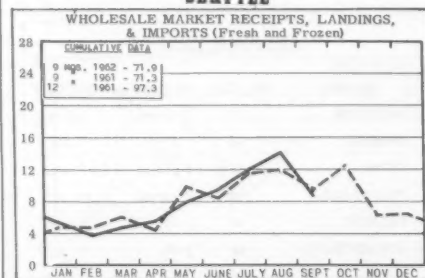
^{2/}AS REPORTED BY PLANTS IN METROPOLITAN AREA.



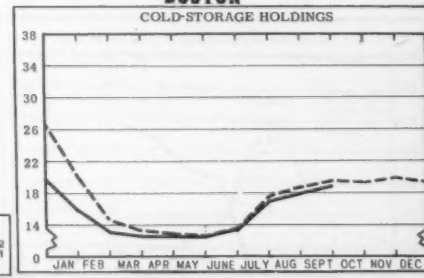
CHICAGO



SEATTLE



BOSTON



LEGEND:
— 1962
- - - 1961

CHART 5 - FISH MEAL and OIL PRODUCTION - U.S. and ALASKA

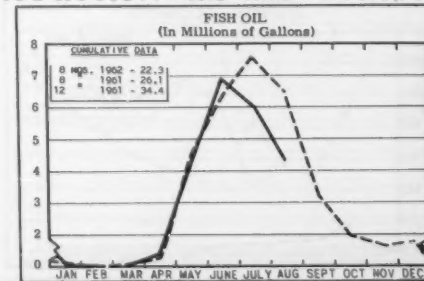
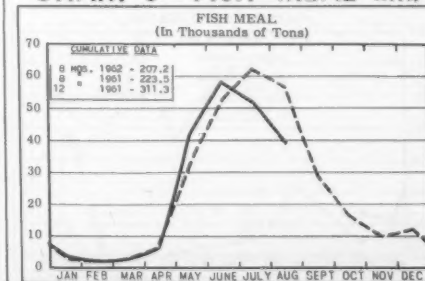
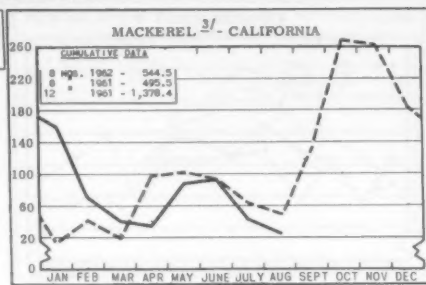
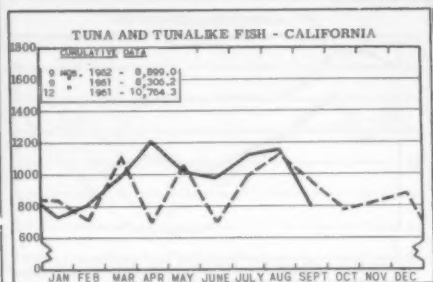
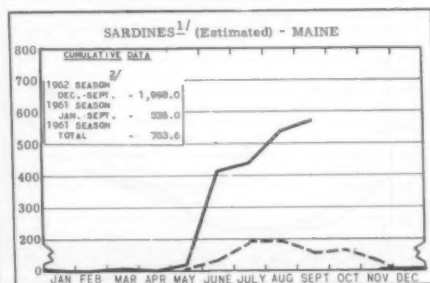
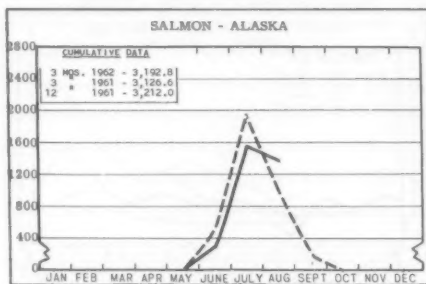
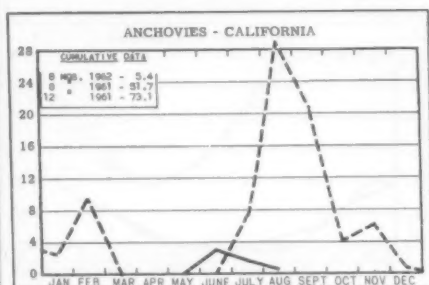


CHART 6 - CANNED PACKS of SELECTED FISHERY PRODUCTS

In Thousands of Standard Cases



^{3/} INCLUDES PACIFIC MACKEREL AND JACK MACKEREL.



^{1/} INCLUDING SEA HERRING. ^{2/} THE 1962 SEASON STARTED DEC. 2, 1961.

STANDARD CASES

Variety	No. Cans	Designation	Net Wgt.
SARDINES.....	100	$\frac{1}{2}$ drawn	3 $\frac{1}{2}$ oz.
SHRIMP.....	48	--	5 oz.
TUNA.....	48	# $\frac{1}{2}$ tuna	5 & 7 oz.
PILCHARDS...	48	# 1 oval	15 oz.
SALMON.....	48	1-lb. tall	16 oz.
ANCHOVIES...	40	$\frac{1}{2}$ -lb.	8 oz.

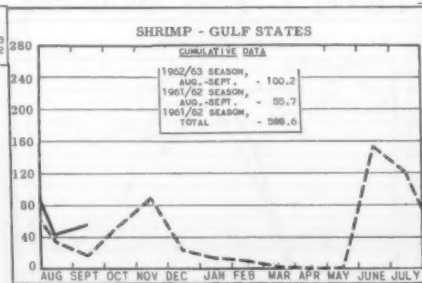
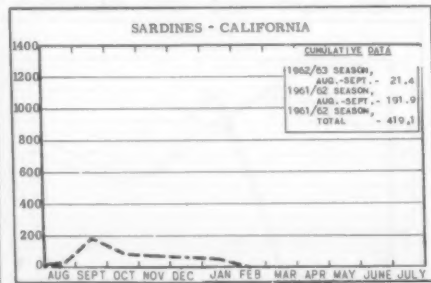
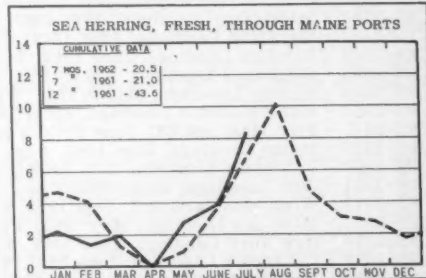
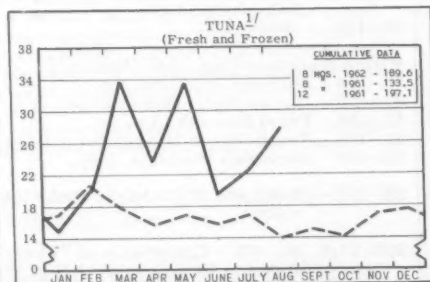
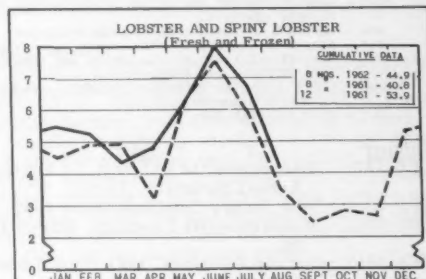
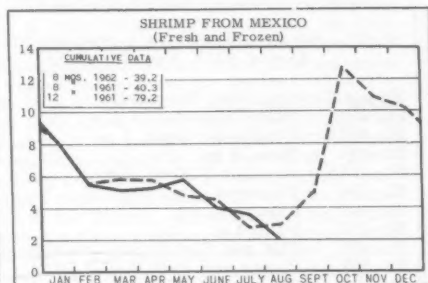
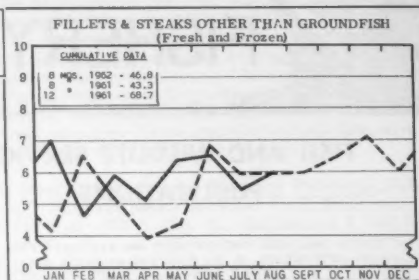
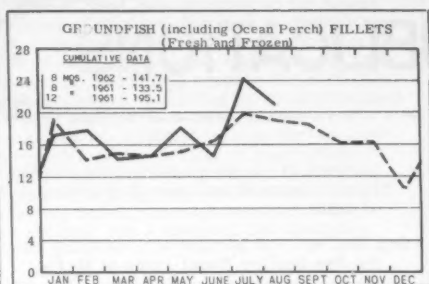
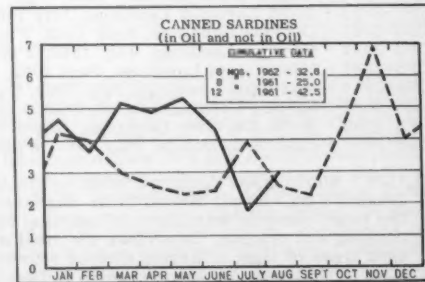
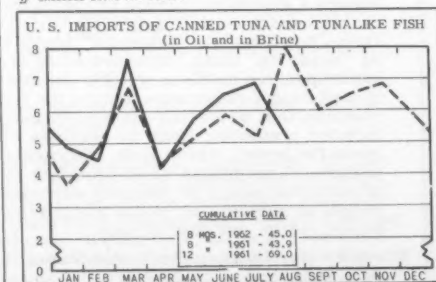


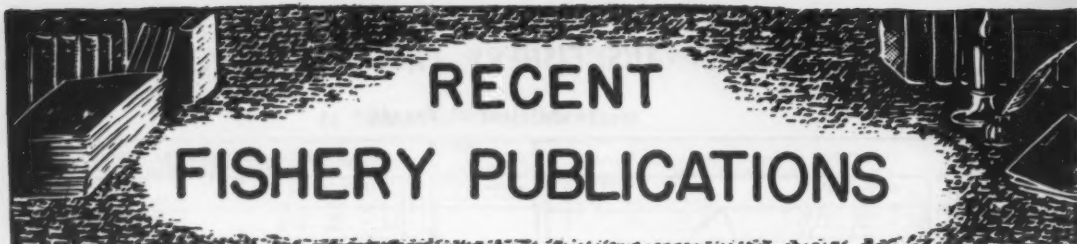
CHART 7 - U.S. FISHERY PRODUCTS IMPORTS

In Millions of Pounds



^{1/} EXCLUDES LOINS AND DISCS.





RECENT FISHERY PUBLICATIONS

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE OFFICE OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

- CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES.
- FL - FISHERY LEAFLETS.
- MWL - REPRINTS OF REPORTS ON FOREIGN FISHERIES.
- SEP. - SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.
- SL - STATISTICAL LISTS OF DEALERS IN AND PRODUCERS OF FISH-ERY PRODUCTS AND BYPRODUCTS.
- SSR - FISH. - SPECIAL SCIENTIFIC REPORTS--FISHERIES (LIMITED DISTRIBUTION).
- WL - WILDLIFE LEAFLETS.

- | Number | Title |
|----------|--|
| CFS-2877 | - Massachusetts Landings by Ports, 1961 Annual Summary, 14 pp. |
| CFS-2954 | - New Jersey Landings, June 1962, 3 pp. |
| CFS-2955 | - Massachusetts Landings, March 1962, 5 pp. |
| CFS-2957 | - Shrimp Landings, 1961 Annual Summary, 21 pp. |
| CFS-2959 | - Rhode Island Landings, May 1962, 3 pp. |
| CFS-2960 | - Frozen Fish Report, July 1962, 8 pp. |
| CFS-2961 | - Mississippi Landings, May 1962, 3 pp. |
| CFS-2962 | - Maryland Landings, June 1962, 3 pp. |
| CFS-2963 | - Virginia Landings, June 1962, 3 pp. |
| CFS-2964 | - California Landings, April 1962, 4 pp. |
| CFS-2965 | - Shrimp Landings, March 1962, 6 pp. |
| CFS-2966 | - Massachusetts Landings, April 1962, 5 pp. |
| CFS-2967 | - Fish Meal and Oil, June 1962, 2 pp. |
| CFS-2969 | - Maine Landings, June 1962, 4 pp. |
| CFS-2970 | - California Landings, May 1962, 4 pp. |
| CFS-2971 | - Ohio Landings, June 1962, 2 pp. |
| CFS-2972 | - Wisconsin Landings, June 1962, 2 pp. |
| CFS-2973 | - Michigan Landings, May 1962, 3 pp. |
| CFS-2974 | - New York Landings, June 1962, 4 pp. |
| CFS-2975 | - California Landings, June 1962, 4 pp. |
| CFS-2976 | - Rhode Island Landings, June 1962, 3 pp. |
| CFS-2978 | - Texas Landings, May 1962, 3 pp. |
| CFS-2979 | - South Carolina Landings, July 1962, 2 pp. |
| CFS-2981 | - Georgia Landings, June 1962, 2 pp. |
| CFS-2982 | - Georgia Landings, July 1962, 2 pp. |
| CFS-2983 | - Mississippi Landings, June 1962, 3 pp. |
| CFS-2984 | - Maryland Landings, July 1962, 3 pp. |
| CFS-2985 | - Shrimp Landings, April 1962, 6 pp. |
| CFS-2988 | - North Carolina Landings, July 1962, 3 pp. |
| CFS-2990 | - Florida Landings, July 1962, 8 pp. |

FL-534 - Marking and Tagging Fishes, by Albert C. Jensen, 8 pp., illus., March 1962. Discusses the two most common techniques of marking fish, fin clipping and tagging. Describes the most widely used types of tags, a tagging method representative of that used for many species of fish, and ob-

jectives of marking and tagging studies. Includes illustrations of methods of attaching different types of tags.

Sep. No. 657 - A Method of Predicting Fluctuations in the Sea Scallop Populations of Maine.

Sep. No. 658 - Accuracy of Net-Weight Determinations for Frozen Glazed Halibut Steaks.

SL-21 - Wholesale Dealers in Fishery Products, California, 1962, 7 pp. (Revised).

Firms Canning, 1961 (Revised):

- SL-102 - Maine Sardines, 1 p.
- SL-102A - Pacific Sardines, 1 p.
- SL-103 - Tuna, 2 pp.
- SL-103A - Tunalike Fishes, 1 p.
- SL-104 - Mackerel, 1 p.
- SL-105 - Alewives, 1 p.
- SL-106 - Shad, 1 p.
- SL-107 - Fish and Shellfish Specialties, 5 pp.
- SL-109 - Caviar and Fish Roe, 2 pp.
- SL-110 - Oysters, 2 pp.
- SL-116 - Food for Animals from Marine-Animal Products, 2 pp.
- SL-119 - Squid, 1 p.

Firms Manufacturing, 1961 (Revised):

- SL-154 - Seaweed Products, 1 p.
- SL-155 - Marine Pearl Shell Buttons, 1 p.
- SL-156 - Pearl Essence, 1 p.
- SL-159 - Fresh-Water Mussel-Shell Products, 1 p.
- SL-160 - Menhaden Products, 2 pp.

SL-161 - Producers of Packaged Fish, 1961, 7 pp. (Revised).

SSR-Fish. No. 409 - Conversion of "Whole" and "Headless" Weights in Commercial Gulf of Mexico Shrimps, by Joseph H. Kutkuhn, 8 pp., illus., March 1962. Discusses a statistical survey on the conversion of commercial catch statistics tabulated according to weight from "headless" or "heads-off" terms back to "whole" or "heads-on" units. Measurements of whole and corresponding headless weights permitted estimation of weight conversion factors for five of the most common Gulf of Mexico shrimp. Equations and factors for predicting whole or headless weights are given for brown, white, pink, and rock shrimp, and seabob. Nomographs which facilitate the conversion of individual whole or headless shrimp on a simple weight or number-per-pound basis are provided for brown, white, and pink shrimp.

WL-444 - Fur Catch in the United States, 1961, 4 pp., June 1962.

Annual Report of the Commissioner Fish and Wildlife Service to the Secretary of the Interior, 44 pp., illus., printed. (Reprinted from the Annual Report of the Secretary of the Interior, for the fiscal year ended June 30, 1961.) Summarizes the various activities of the Service. Describes the activities of the Bureau of Commercial Fisheries: biological research on salmon, tuna, sea lamprey in the Great Lakes, radiation of seafood, fish meals, fishing gear, and economic trends within the fishing industry; and construction of new laboratories and research vessels. Also covers marketing reports and statistics; foreign trade activities, including tariff negotiations and fish meal promotion; the Columbia River Fishery Program; and the Pribilof Islands fur-seal resource. Activities of the Bureau of Sport Fisheries and Wildlife include, among others, a marine game-fish research program, Federal aid in sport-fish restoration, fishery management activities, river basin studies, and a national fish hatchery program.

Report of the Bureau of Commercial Fisheries for the Calendar Year 1957, 78 pp., printed, 1962. This is the first report of the Bureau of Commercial Fisheries, established in 1956. This, however, is not the first annual Government report on fishery activities, for the U.S. Commissioner of Fish and Fisheries issued an annual report to Congress for the year 1872-73. The U.S. Bureau of Fisheries continued the reporting through 1940, after which fishery activities were described annually by the Secretary of the Interior in his departmental report to the President. The present fishery report renews the original series and presents a condensed record of the administrative actions of the Bureau. After background material is given, the report discusses the budget and physical property for the fiscal year 1957; conditions, trends, and developments in both domestic and international fisheries; principal accomplishments of the Bureau in the North Pacific, California, Gulf of Mexico, Atlantic coast, and the Great Lakes; and new programs, meetings, and cooperative efforts in fishery matters undertaken by the Bureau. The appendix includes the Fish and Wildlife Act of 1958, an organization chart of the Bureau, the budget for FY 1957, a list of laws relating to the U.S. commercial fishery, a 1957 list of publications by Bureau personnel, and other data.

THE FOLLOWING MARKET NEWS LEAFLETS ARE AVAILABLE FROM THE
BRANCH OF MARKET NEWS, BUREAU OF COMMERCIAL FISHERIES, U. S.
FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C.

Number	Title
MNL-8	Portugal's Fishing Industry, 1961, 22 pp.
MNL-32	Venezuelan Commercial Catch, Production of Processed Fishery Products and Foreign Trade, 14 pp.
MNL-54	Fisheries in Singapore and British Borneo, 3 pp.

THE FOLLOWING PUBLICATIONS ARE AVAILABLE ONLY FROM THE
SPECIFIC OFFICE MENTIONED.

Annual Report of the Biological Laboratory, Woods Hole, Mass. (for the Year Ending June 30, 1961), Circular 137, 92 pp., illus., processed, February 1, 1962. (Bureau of Commercial Fisheries, Biological Laboratory, Woods Hole, Mass.) Presents a summary of the laboratory's research activities in the Northwest Atlantic Fishery Investigations program. Studies relating to the management of the

groundfish of the Northwest Atlantic, as in past years, continued to occupy an important place in the program. Recommendations limiting the size of net meshes in the various subareas were made by the International Commission for the Northwest Atlantic Fisheries to member countries. The conservation of sea scallops was given considerable attention this year. The highlight of the year was the completion and occupation of the aquarium building. The report also outlines investigations on haddock, ocean perch, cod, hake, flounder, groundfish ecology, benthic ecology, plankton, fish behavior, and larval fish feeding. Also contains reports on biometrics, tagging, shellfish research, and instrumentation studies. Recent publications are also listed and statistical data are given concerning the Laboratory's library.

(Baltimore) Monthly Summary--Fishery Products, July 1962, 8 pp. (Market News Service, U. S. Fish and Wildlife Service, 103 S. Gay St., Baltimore 2, Md.) Receipts of fresh- and salt-water fish and shellfish at Baltimore by species and by states and provinces; total receipts by species and comparisons with previous periods; and wholesale prices for fresh fishery products on the Baltimore market; for the month indicated.

California Fishery Market News Monthly Summary, Part I - Fishery Products Production and Market Data, July 1962, 17 pp. (Market News Service, U. S. Fish and Wildlife Service, Post Office Bldg., San Pedro, Calif.) California cannery receipts of tuna and tuna-like fish and other species used for canning; pack of canned tuna, tunalike fish, mackerel, and anchovies; market fish receipts at San Pedro, Santa Monica, and Eureka areas; California and Arizona imports; canned fish and frozen shrimp prices; ex-vessel prices for cannery fish; for the month indicated.

(Chicago) Monthly Summary of Chicago's Wholesale Market Fresh and Frozen Fishery Products Receipts, Prices, and Trends, July 1962, 13 pp. (Market News Service, U. S. Fish and Wildlife Service, 565 W. Washington St., Chicago 6, Ill.) Receipts at Chicago by species and by states and provinces for fresh- and salt-water fish and shellfish; and weekly wholesale prices for fresh and frozen fishery products; for the month indicated.

Gulf of Mexico Monthly Landings, Production and Shipments of Fishery Products, July and August 1962, 8 and 9 pp. respectively (Market News Service, U. S. Fish and Wildlife Service, Rm. 609, 600 South St., New Orleans 12, La.) Gulf States shrimp, oyster, finfish, and blue crab landings; crab meat production; LCL express shipments from New Orleans; wholesale prices of fish and shellfish on the New Orleans French Market; fishery imports at Port Isabel and Brownsville, Texas, from Mexico; and sponge sales; for the months indicated.

Monthly Summary of Fishery Products Production in Selected Areas of Virginia, North Carolina, and Maryland, August 1962, 4 pp. (Market News Service, U. S. Fish and Wildlife Service, 18 S. King St., Hampton, Va.) Landings of food fish and shellfish and production of crab meat and shucked oysters for the Virginia areas of Hampton Roads, Chincoteague, Lower Northern Neck, and Lower Eastern Shore; the Maryland areas of Crisfield, Cambridge, and Ocean City; and the North Carolina areas of Atlantic, Beaufort, and Morehead City; together with cumulative and comparative data on fishery products and shrimp production; for the month indicated.

(Seattle) Washington and Alaska Receipts and Landings of Fishery Products for Selected Areas and Fisheries, Monthly Summary, August 1962, 9 pp. (Market News Service, U. S. Fish and Wildlife Service, 706 Federal Office Bldg., 909 First Ave., Seattle 4, Wash.) Includes Seattle's landings by the halibut and salmon fleets reported through the exchanges; landings of halibut reported by the International Pacific Halibut Commission; landings of otter-trawl receipts reported by the Fishermen's Marketing Association of Washington; local landings by independent vessels; coastwise shipments from Alaska by scheduled and non-scheduled shipping lines and airways; imports from British Columbia via rail, motor truck, shipping lines, and ex-vessel landings; and imports from other countries through Washington customs district; for the month indicated.

New York City's Wholesale Fishery Trade--Monthly Summary--May 1962, 21 pp. (Market News Service, U. S. Fish and Wildlife Service, 155 John St., New York 38, N. Y.) Includes summaries and analyses of receipts and prices on wholesale Fulton Fish Market, including both the salt- and fresh-water sections; imports entered at New York customs district; primary wholesalers' selling prices for fresh, frozen, and selected canned fishery products; marketing trends; and landings at Fulton Fish Market docks and Stonington, Conn.; for the month indicated.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, U. S. GOVERNMENT PRINTING OFFICE, WASHINGTON 25, D. C.

"A Comparison of Rearing Methods for Channel Catfish Fingerlings," by J. R. Snow, article, Progressive Fish-Culturist, vol. 24, no. 3, July 1962, pp. 112-118, processed, 25 cents.

"A Device for Evaluating the Numbers and Rates of Downstream Fish Movements," by Donald H. Nolting, article, Progressive Fish-Culturist, vol. 24, no. 3, July 1962, pp. 131-132, illus., processed, 25 cents.

"Hatchery-Reared Atlantic Salmon Smolts in Ten Months," by Henry C. Markus, article, Progressive Fish-Culturist, vol. 24, no. 3, July 1962, pp. 127-130, illus., processed, 25 cents.

"Lethal Effect of Fluorescent Light on the Eggs of the Brook Trout," by Alfred Perlmutter and Edward White, article, Progressive Fish-Culturist, vol. 24, no. 1, January 1962, pp. 26-30, processed, single copy 25 cents.

"A 132-Kilocycle Sonic Fish Tag," by Anthony J. Novotny and Gordon F. Esterberg, article, Progressive Fish-Culturist, vol. 24, no. 3, July 1962, pp. 139-141, illus., processed, 25 cents.

"Pelage and Surface Topography of the Northern Fur Seal," by Victor B. Scheffer, North American Fauna No. 64, 212 pp., illus., printed, \$1, 1961. Contains information on the fur-seal pelage of the northern fur seal, Callorhinus ursinus (L.), on the Pribilof Islands. Describes certain gross and microscopic aspects of the pelage on representative specimens ranging in age from fetal to old adult, and other features of the surface topography. Contains statistical data on length and weight of male and female fetal seals, sizes of male sealskins taken in early and late season, trade classification of sealskins with relation to field length of seals, yield of oil

from fur seals, and related data. Also includes data on the Pribilof sealskin industry and on natural colors of seals and their pelts.

"Shipping Small Chinook Salmon in Closed Plastic Containers," by Richard S. Harrison and Keith D. Moore, article, Progressive Fish-Culturist, vol. 24, no. 3, July 1962, pp. 135-136, illus., processed, 25 cents.

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE ORGANIZATIONS OR PUBLISHER MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

ABALONE:

"Isolation of a Photodynamic Agent from the Liver of Abalone Haliotis discus hannai," by Yoshiro Hashimoto and Junzo Tsutsumi, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, September 1961, pp. 859-866, printed. Japanese Society of Scientific Fisheries, 6-Chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

ALASKA:

Regulations of the Alaska Board of Fish and Game for Commercial Fishing in Alaska, 124 pp., printed. Alaska Department of Fish and Game, 229 Alaska Office Bldg., Juneau, Alaska, 1962. Contains license fees and statutes, definitions of terms used in the regulations, and provisions for commercial fishing in Alaska and in international waters. The general provisions section discusses regulations such as license requirements for fishermen, vessels, and gear; reports required from operators; inspection of fishery establishments; prohibition of explosives, chemicals, and poisons. Also discusses salmon, bottomfish, smelt, herring, shellfish, whitefish, sheefish, and char fisheries requirements; subsistence fishery provisions; and emergency regulations.

ALGAE:

"Ninhydrin Reactive Substances in Marine Algae. I--On the Absorbable Fraction on Strong Cationic Ion-Exchange Resin; II--On the Nonabsorbable Fraction on Strong Cationic Ion-Exchange Resin," by Mitsuo Kuriyama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, July 1961, pp. 689-698, printed in Japanese. Japanese Society of Scientific Fisheries, 6-Chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

ALGERIA:

"La place de la peche maritime dans le developpement economique de l'Algerie" (The Position of the Marine Fishery in the Economic Development of Algeria), by R. Simonnet, article, La Peche Maritime, vol. 41, no. 1012, July 1962, pp. 512-518, illus., printed in French. La Peche Maritime, 190, Boulevard Haussmann, Paris, France.

AMINO ACIDS:

Amino Acid Composition of Fresh Fish and Influence of Storage and Processing (Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by F. A. L. Bramstedt, 8 pp., processed in English with French

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

"A Chromatographic Analysis of the Bound Amino Acids in Lamprey Muscle (Petromyzontidae)," by Bruce M. Carlson, article, *Journal of Experimental Zoology*, vol. 147, no. 1, 1961, pp. 43-58, printed. Cambridge University Press, 200 Euston Rd., London NW1, England.

ANTIBIOTICS:

"The Method of Determination of Chlortetracycline in Fish Muscle," by G. B. Dubrova, *Chemical Abstracts*, vol. 55, November 13, 1961, 23866a, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

BACTERIOLOGY:

"Influence of Heavy Metals Upon the Growth and the Activity of Marine Sulfate-Reducing Bacteria," by Y. Hata, article, *Journal of the Shimonoseki College of Fisheries*, vol. 9, 1960, pp. 363-367, printed in Japanese with English summary. Shimonoseki College of Fisheries, Jamaguchi Prefecture, Yoshimi, Shimonoseki, Japan.

"Response of Marine Sulfate-Reducing Bacteria to the Salinity of Culture Medium," by Y. Hata, article, *Journal of the Shimonoseki College of Fisheries*, vol. 9, 1960, pp. 329-345, printed in Japanese with English summary. Shimonoseki College of Fisheries, Jamaguchi Prefecture, Yoshimi, Shimonoseki, Japan.

BIOCHEMISTRY:

"Muscle Extracts of Aquatic Animals. III--On the Method for Determination of Betaine and its Content of the Muscle of Some Marine Animals," by Shoji Konosu and Eiichi Kasai, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, February 1961, pp. 194-198, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Ophidin Isolated from Whale Pancreas," by Shigeru Tsuno, Akhiko Musashi, and Kazuyoshi Horisaka, article, *Proceedings of the Japan Academy*, 1959, pp. 485-490, printed in German. Secretary, Office of the Japanese Academy, Ueno Park, Tokyo, Japan.

"On the Prosthetic Group of Hemoglobin and Myoglobin of Tuna," by Yuzo Yamaguchi and Fumio Matsuura, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, January 1961, pp. 38-41, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Studies on Muscle of Aquatic Animals. XXIX--Extractability of Fish Myosin (Part I). Composition of Myosins Extracted Under Various Conditions," by Tadao Ueda, Yutaka Shimizu, and Wataru Simidu, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, February 1961, pp. 150-157, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba Kaigandori, Minato-Ku, Tokyo, Japan.

"Sulfdryl Groups and the Retardation of Cleavage by Extracts of Sea Urchin Eggs," by Nancy Wolfson and K. M. Wilbur, article, *Experimental Cell Research*, vol. 21, 1960, pp. 219-222, printed. Experimental Cell Research, Academic Press, Inc., 111 Fifth Ave., New York 3, N. Y.

BIVALVES:

Effects of Turbidity on Some Larval and Adult Bivalves, by Victor L. Loosanoff, 16 pp., illus., printed. (Reprinted from *Proceedings of the Gulf and Caribbean Fisheries Institute*, Fourteenth Annual Session, November 1961, pp. 80-95.) Gulf and Caribbean Fisheries Institute, Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

CALIFORNIA:

A Field Guide to Some Common Ocean Sport Fishes of California Part 2, by Daniel J. Miller, Dan Gottshall, and Richard Nitsos, 40 pp., illus., printed. California Department of Fish and Game, 722 Capital Ave., Sacramento 14, Calif., 1961.

Statistical Report of Fresh, Canned, Cured and Manufactured Fishery Products, Year 1961, Circular No. 36, 16 pp., printed. Department of Fish and Game, Biostatistical Section, Marine Resources Operations, Sacramento Calif., 1962. This report, the latest in a series of annual reports on commercial fishery production in California, includes statistical tables on landings by species and areas, imports of tuna, and pack of canned fish. Data also cover volume of other types of processed fish, sardine meal and oil production, and the annual pack of sardines, anchovies, tuna, and bonito and yellow-tail. Lists canning and reduction plants operating in 1961 as well as plants curing and manufacturing fishery products.

CANADA:

Fisheries Statistics of British Columbia, 1961 (Preliminary), 14 pp., printed. Department of Fisheries, Economics Branch, Pacific Area, Vancouver, B. C., Canada, April 1962. Discusses the total value of fish and fish products produced in 1961 with an analysis of the increase in total landings; landed and marketed value, production and utilization, and canned pack of salmon; landings and value of herring, halibut, crab, and shrimp; fishing vessels; gear and equipment; and number of licensed fishermen. Includes statistical tables on landings and values by species and by years; salmon pack, 1961; fish-liver production; and other similar data.

Fisheries Statistics of Canada, 1960 (Canada Summary), 65 pp., printed in English and French, 75 Canadian cents. Queen's Printer and Controller of Stationery, Ottawa, Canada, June 1962. This report provides a summary of the Canadian fisheries, arranged to show separately the three main fisheries areas--Atlantic, Pacific, and Inland. Also contains statistical tables on landings, quantity, and value by species and provinces; value of exports and imports of fish and fishery products; employment and capital equipment in the primary industry; and fish processing, packing, or handling establishments in Canada and the provinces.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Fisheries Statistics of Canada (Nova Scotia), 1960, 42 pp., printed in French and English, C\$1. Queen's Printer and Controller of Stationery, Ottawa, Canada, June 1962. Consists of tables giving the quantity and value of fish and shellfish landed in Nova Scotia, 1948-60; quantity and value by species and fisheries districts, 1959-60; capital equipment employed and number of persons engaged in the primary operations by fisheries districts, 1959-60; and classification of powered fishing craft by over-all length.

Journal of the Fisheries Research Board of Canada, vol. 19, no. 4, July 1962, 214 pp., illus., printed, single copy C\$1.50. Queen's Printer and Controller of Stationery, Ottawa, Canada. Includes, among others, the following articles: "The Effect of Reduction of Fishing Effort on Yield," by Syoiti Tanaka; "Comparison of Ocean Growth and Mortality of Sockeye Salmon during Their Last Two Years," by W. E. Ricker; "Estimations of Ocean Mortality Rates for Pacific Salmon (*Oncorhynchus*)," by Robert R. Parker; "Proteins in Fish Muscle. 17--Fractionation of Aqueous Extracts with Zinc Acetate," by J. R. Dingle, J. A. Hines, and J. M. Neelin; "Conversion of the Free Fatty Acids of Cod Oil to Methyl Esters in Situ," by R. G. Ackman and others; "Effect of Tetracycline Antibiotics on Objective and Subjective Fish Quality Tests," by J. W. Boyd and B. A. Southcott; "Blood pH and Mortality in Rainbow Trout (*Salmo gairdneri*) and Sockeye Salmon (*Oncorhynchus nerka*)," by R. E. E. Jonas, Harcharan S. Sehdev, and N. Tomlinson; "Skin-Diving Observations of Atlantic Salmon and Brook Trout in the Miramichi River, New Brunswick," by Miles H. A. Keenleyside; "Physical Properties and Hydrostatic Function of the Swimbladder of Herring (*Clupea harengus* L.)," by Vivien M. Brawn; "Distinctions between the Broad Whitefish, *Coregonus nasus*, and Other North American Whitefishes," by C. C. Lindsey; "Effect of Food Quantity on Fecundity of Rainbow Trout, *Salmo gairdneri*," by D. P. Scott; and "The Phospholipid Content of Lingcod Muscle during Frozen Storage," by R. E. E. Jonas and N. Tomlinson.

Operations of Modern Fishing Craft, Atlantic Seaboard, 1960, by John Proskie, Primary Industry Studies No. 1, vol. 10, 141 pp., processed. Economics Service, Department of Fisheries of Canada, Ottawa, Canada, 1962. (Available from Queen's Printer and Controller of Stationery, Ottawa, Canada.) Annual progress report on a study of the economics of primary fishing enterprises in the Atlantic provinces. Presents in summary form the results of fishing activities and the financial outcome for 139 primary fishing enterprises. The statistical data cover description of boats, capital cost, financing, and ownership; landings and landed values of fishery products, prices, receipts, expenditures, and net returns; fishing effort and returns; geographic operational areas; and seasonal fishing effort and landings.

"Proximate Composition of Canadian Atlantic Fish. II--Mackerel, Tuna, and Swordfish," by A. Mannan, D. I. Fraser, and W. J. Dyer, article, Journal of the Fisheries Research Board of Canada, vol. 18, no. 4, July 1961, pp. 495-499, printed. Fisheries Research Board of Canada, Queen's Printer and Controller of Stationery, Ottawa, Canada.

CARP:

"O Prichinakh Zabolevaniya Sazana v Del'Te Volgi" (The Causes of the Disease Among the Carp of the Volga Delta), by M. S. Kun, Biological Abstracts, vol. 37, no. 3, 1962, 8405, printed. University of Pennsylvania, 38-5 Walnut St., Philadelphia 4, Pa.

Serological Analysis of Wild and Domesticated Forms of Carp (CYPRINUS CARPIO L.), by D. N. Taliev, OTS 61-11418, 45 pp., illus., printed, 50 cents. (Translated from Trudy Zoologicheskogo instituta Akademii Nauk SSSR, vol. 8, no. 1, 1946, pp. 43-88.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1961.

CATFISH:

"Arkansas Studying Commercial Feeding of Channel Catfish," article, Feedstuffs, vol. 33, November 18, 1961, p. 77, printed. Feedstuffs, Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

"A Comparison of Spawning Environments for the Channel Catfish," by J. R. Snow, article, Proceedings of the Fourteenth Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 137-142, printed. Southeastern Association of Game and Fish Commissioners, Columbia, S. C., 1960.

"Preliminary Results on the Production and Spawning of White Catfish in Ponds," by E. E. Prather and H. S. Swingle, article, Proceedings of the Fourteenth Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 143-145, printed. Southeastern Association of Game and Fish Commissioners, Columbia, S. C., 1960.

"Spawning of Channel Catfish by Use of Hormone," by Ben A. Nelson, article, Proceedings of the Fourteenth Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 145-148, printed. Southeastern Association of Game and Fish Commissioners, Columbia, S. C., 1960.

CHAR:

"Age and Growth of the Freshwater Stage of Anadromous Char *Salvelinus alpinus* (L.)," by Jorgen Nielsen, article, Meddelelser om Gronland, vol. 159, no. 8, 1961, printed in Danish. Meddelelser om Gronland, C. A. Reitzel, Copenhagen, Denmark.

CHITIN:

"Structure of Chitin," by N. E. Dweltz, article, Biochimica et Biophysica Acta (International Journal of Biochemistry and Biophysics), vol. 44, 1960, pp. 416-435, printed. Elsevier Publishing Co., P. O. Box 211, Amsterdam, Holland.

CLAMS:

"Clam Poison. II--Purification of Clam Poison Residues of Low Toxicity by a Heavy-Paper Technique," by R. A. B. Bannard and A. A. Casselman, article, Canadian Journal of Chemistry, vol. 39, October 1961, pp. 1879-1887, printed. National Research Council, Ottawa 2, Canada.

"Marine Sterols. IX--Biosynthesis of 24-Methylenecholesterol in Clams," by U. H. M. Fagerlund and

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

D. R. Idler, article, Canadian Journal of Biochemistry and Physiology, vol. 39, September 1961, pp. 1347-1355, printed. Division of Administration, The National Research Council, Sussex St., Ottawa, Canada.

COD:

"Chemical Characteristics of Salted Cod," by A. Cardin and others, article, Journal of the Fisheries Research Board of Canada, vol. 18, September 1961, pp. 851-858, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

The Effect of Linoleic and Linoleic Acids on the Solubility of Cod Actomyosin (Paper read at FAO International Conference on Fish in Nutrition, Washington D. C., 19-27 September 1961), by F. J. King, M. L. Anderson, and M. A. Steinberg, printed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

"The Light Pickle Salting of Cod," by P. B. Crean, article, Journal of the Fisheries Research Board of Canada, vol. 18, September 1961, pp. 833-844, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

"Partial Desalting of Salted Cod," by P. B. Crean, article, Journal of the Fisheries Research Board of Canada, vol. 18, September 1961, pp. 845-850, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

"Temperature and the Biochemical Processes Occurring during Rigor Mortis in Cod Muscle," by Doris I. Fraser, Somsee Punjamapirom, and W. J. Dyer, article, Journal of the Fisheries Research Board of Canada, vol. 18, July 1961, pp. 641-644, printed. Journal of the Fisheries Research Board of Canada, Queen's Printer and Controller of Stationery, Ottawa, Canada.

"Vliyaniye Gidrobiologicheskikh Uslovii na Sroki Neresta i Urozhainost' Baltiiskoi Treski" (The Effect of Hydrobiologic Conditions on the Spawning Time and Productivity of the Baltic Cod), by A. E. Antonov, article, Trudy Baltiiskogo Nauchno-Issledovatel'skii Inst. Morskogo Rybnogo Khoz. i Okeanograf., vol. 6, 1960, pp. 22-27, printed in Russian. Four Continent Book Corp., 156 5th Ave., New York 10, N. Y.

COLD STORAGE:

Economical Methods of Maintaining Low Temperature and High Humidity in Cold Stores, by S. Forbes Pearson, Torry Memoir No. 31, 6 pp., printed. Torry Research Station, Aberdeen, Scotland.

"Freezing and Cold Storage: Determination of Toughness," article, Torry Research Station, Annual Report 1960, pp. 15-16, printed. Torry Research Station, Aberdeen, Scotland, 1961.

"Storage in Chilled Sea Water: Use of Flake Ice for Storage at Sea," article, Torry Research Station, Annual Report 1960, pp. 7-8, printed. Torry Research Station, Aberdeen, Scotland, 1961.

COMMISSIONS:

Fourteenth Annual Report of the Pacific Marine Fisheries Commission for the Year 1961, 120 pp., illus., printed. Pacific Marine Fisheries Commission, 741 State Office Bldg., 1400 SW. 5th Ave., Portland 1, Oreg. Reports briefly the specific activities of the Pacific Marine Fisheries Commission during 1961 and presents a review of developments in the fields of research, regulation, and coordination. Reviews recent changes in Commission policy, meetings and conferences held during 1961, and Federal legislation of interest to the Commission. Presents sections on the status of albacore, crab, pink shrimp, troll salmon, and bottomfish fisheries of the Pacific Coast. Also includes the results of investigations on the distribution of albacore in the North Pacific, the inspection of Japanese oyster seed, a mortality study on pre-season troll-caught silver salmon, and the embryonic survival of coho salmon and steelhead trout as influenced by some environmental conditions in gravel beds.

COMMUNIST CHINA:

"China's Fishing Industry is Developing Fast," article, World Fishing, vol. 10, December 1961, p. 51, printed. John Trundell Ltd., St. Richard's House, Eversholt St., London NW1, England.

"Gibrobiologicheskije i Ikhtologicheskije Issledovaniya Rek Yantszy i Khan'Tszyan v Svyazi s Gibrostroitel'stvom v Basseine Reki Yantszy v Kitaiskoi Narodnoi Respublike" (Hydrobiological and Ichthyological Studies on the Yangtze and Hanchiang Rivers in Connection With the Construction of a Dam in the Yangtze River Basin in the Chinese Peoples' Republic), by Pai Kuo-Tung and others, article, Zoologicheskii Zhurnal, vol. 8, 1960, pp. 1121-1134, printed in Russian. Redaktsiia Zoologicheskogo Zhurnala, Podsosenskiy per. d. 21., Moscow B-64, U.S.S.R.

COMPOSITION:

"Adenosinetriphosphate and the Related Compounds in the Muscle of Aquatic Animals," article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, May 1961, pp. 461-470, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Changes in Chemical Composition of Fish Tissue During Storage," by A. N. Bose and D. Roy Chowdhury, Chemical Abstracts, vol. 54, June 25, 1960, 12416b, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Proximate Composition of Canadian Atlantic Fish. II--Mackerel, Tuna and Swordfish," by A. Mannan, D. I. Fraser, and W. J. Dyer, article, Journal of the Fisheries Research Board of Canada, vol. 18, July 1961, pp. 495-499, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

Proximate Composition of Fish (Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by M. E. Stansby, 7 pp., processed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"Studies on the Ascorbic Acid Content of Fish Tissues. II," by P. Ambuja Bai and M. Kalyani, article, *Journal of the Zoological Society of India*, vol. 12, no. 2, 1961, pp. 216-219, printed. Zoological Society of India, c/o Zoological Survey of India, 34 Chittaranjan Ave., Calcutta 12, India.

CRABS:

"Metabolism of Glucose in the Crabs *Cancer magister* and *Hemigrapsus nudus*," by V. R. Meenakshi and B. T. Scheer, article, *Comparative Biochemistry and Physiology*, vol. 3, 1961, pp. 30-41, printed. *Comparative Biochemistry and Physiology*, 122 E. 55th St., New York 22, N. Y.

CZECHOSLOVAKIA:

"Okhrana Rybníků Zpasav v Chechoslovákii" (Conservation of Fish Resources in Czechoslovakia), by N. Bakanov, article, *Rybovodstvo i Rybolovstvo*, vol. 1, 1961, pp. 54-55, printed in Russian. Ministerstvo sel'skogo Khoziaistva SSSR, Moscow, U.S.S.R.

DENMARK:

"Danmarks Fiskekonserverindustri, 1961-62" (Denmark's Fish Canning Industry, 1961-62), article, *Konserver & Dybfrost*, vol. 20, no. 6, 1962, pp. 74-76, illus., printed in Danish. *Konserver & Dybfrost*, Gothersgade 2, 1., Copenhagen K, Denmark.

DRIED FISH:

"Studies on Dried Bombay Duck (*Harpodon nehereus*). I--Denaturation of Proteins and Texture Changes During Drying; II--Changes in the Nutritive Value During Processing," by P. L. Sawant and N. G. Magar, article, *Journal of the Science of Food and Agriculture*, vol. 12, 1961, pp. 298-305, illus., printed. Society of Chemical Industry, 14 Belgrave Square, London SW1, England.

ELECTRICAL FISHING:

"Electric Fishing with Pulsatory Direct Current," by A. M. R. Burnet, article, *New Zealand Journal of Science*, vol. 2, 1959, pp. 46-56, printed. Department of Scientific and Industrial Research, P. O. Box 8018, Government Bldg., Wellington C1, New Zealand.

ENZYMES:

Enzyme of Marine Fish Muscle and Their Role in Fish Spoilage (Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by G. Siebert, printed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

FACTORYSHIP:

"Designing the Refrigerating Plant of Fish Factory-ship," by E. Zimmerman, article, *Schiffbautechnik*, vol. 10, 1960, pp. 379-389, printed in German. VEB Verlag Technik, 13/14 Oranienburgerstrasse, Berlin C. 2, Germany.

FARM PONDS:

Some Aspects of the Ecology and Management of Warm-Water Fish in New York Farm Ponds, by Henry Abraham Regier, thesis, 420 pp., processed. Cornell University, Ithaca, N. Y., 1961.

FATTY ACIDS:

"Monoenic Fatty Acids in Dogfish Livers: Isomers of the C₁₆, C₁₈, C₂₀, and C₂₂ Series," by Donald C. Malins and Clifford R. Houle, article, *Proceedings of the Society for Experimental Biology and Medicine*, vol. 108, October 1961, pp. 126-129, printed. Society for Experimental Biology and Medicine, 630 W. 168th St., New York 32, N. Y.

FILLETS:

"Large-Scale Mechanized Fish Filleting," article, *Food Processing and Packaging*, vol. 29, 1960, pp. 367-370, printed. *Food Processing and Packaging*, Tothill Press Ltd., 33 Tothill St., London SW1, England. Discusses the mechanized large-scale production of fillets at a quick-freezing plant at Hammerfest, Norway. Describes how iced fresh fish delivered by trawlers are first washed and disinfected, weighed, cut into two portions by splitting down the middle, filleted, and skinned. Each fillet is then subjected to an examination on a translucent glass panel so that any bones and discolorations are revealed and removed. After critical analysis by a quality-control expert, the fillets are routed according to their intended use. This will be either for fish-stick production or for sale in consumer packages.

FISH BAIT:

"A New Fish Bait," article, *Current Affairs Bulletin*, Indo-Pacific Fisheries Council, no. 31, 1961, pp. 10-11, printed. Indo-Pacific Fisheries Council, FAO Regional Office, Bangkok, Thailand.

"*Spratelloides delicatulus* (Bennet) as a Potential Live Bait for Tuna in the Laccadives," by S. Jones, article, *Journal of the Marine Biological Association of India*, vol. 2, no. 1, 1960, pp. 103-104, illus., printed. Marine Biological Association, Marine Fisheries Post Office, Mandapam Camp, South India.

FISH BEHAVIOR:

"Opyt Primeneniya Tekhnicheskikh Sredstv Izucheniya Raspredeleniya i Povedeniya Promyslovyykh Ryb" (An Experiment in Applying Technical Means for Studying the Distribution and Behavior of Commercial Fishes), by O. N. Kiselev, article, *Trudy Sovetskoy Akademii Nauk SSSR*, vol. 10, 1960, pp. 235-238, printed in Russian. Four Continents Book Corp., 156 5th Ave., New York 10, N. Y.

FISHERY RESEARCH:

The Establishment of a National Program of Fisheries Research, by C. R. Idyll, Contribution No. 271, 5 pp., printed. (Reprinted from Indo-Pacific Fisheries Council, 9th Proceedings, section III, 1961, pp. 17-21.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

FISHERY RESOURCES:

"Natural Resources of the Sea," by Louis S. Kornicker, article, *Naval Research Reviews*, June 1961, pp. 1-9, illus., printed. Office of Naval Research, Department of the Navy, Washington 25, D. C. A brief review of the sea's natural resources and the part the Navy plays in the development of the marine sciences in the United States. The author discusses the development and acquisition of new and improved research instruments, devices, and techniques for oceanographic research. Resources of the sea are also discussed.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

The World Biomass of Marine Fishes (Paper read at FAO International Conference on Fish in Nutrition, Washington D. C., 19-27 September 1961), by H. W. Graham and R. L. Edwards, 6 pp., illus., processed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

FISH FARMING:

Fish Farming Methods in the Philippines, Indonesia, and Hong Kong, by T. Gottfried Pillai, FAO Fisheries Biology Technical Paper No. 18, 74 pp., illus., processed, limited distribution. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, March 1962. This report is the result of a 25-week study tour on a fellowship granted by the Food and Agriculture Organization of the United Nations. The methods of brackish-water and fresh-water fish farming, as practiced in the Philippines, Indonesia and Hong Kong are discussed. Covers the culture of milkfish, shrimp, siganid, oyster and *Mytilus*, grey mullet, rice-cum-fish, and fresh-water species. The material is arranged and presented as a guide, and may also serve as a basis for the classification and accumulation of data on fish-farming methods.

"Fish Hatcheries and Farms Flourishing," article, Japan Report, vol. 7, November 15, 1961, p. 10, printed. Information Office, Consulate General of Japan, 253 E. 42nd St., New York 17, N. Y.

FISH FAUNA:

"Benthic Fauna of Georges Bank," by Roland L. Wigley, article, Transactions of the Twenty-Sixth North American Wildlife and Natural Resources Conference, pp. 310-317, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., 1961.

FISH FLOUR:

Fish Flour--Technological Developments in Canada (Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by H. Fougere, 8 pp., illus., processed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

Fish Flour--Technological Developments in Iceland

(Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by G. Hannesson, 6 pp., printed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

Fish Flour--Technological Developments in Scandinavia (Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by K. Bakken, 10 pp., illus., printed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Fish Flour--Technological Developments in the United States of America (Paper read at the FAO International

Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by E. R. Pariser, 11 pp., processed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

FISH MEAL:

"Available Lysine as an Index of Fish Meal Quality," by Shirley Kellenbarger, article, Poultry Science, vol. 40, November 1961, pp. 1756-1759, printed. Poultry Science Association, Ohio State University, Columbus 10, Ohio.

"Fish Meal Does Not Flavor Beef," article, Feedstuffs, vol. 33, September 23, 1961, p. 75, printed. Feedstuffs, Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

"Fish Meal Growth Factor Remains Potent in Storage," article, Feedstuffs, vol. 34, February 17, 1962, p. 24, printed. Feedstuffs, Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

"The Nutrition of the Early-Weaned Calf. II--A Comparison of Commercial Peanut Meal, Heat-Treated Peanut Meal, and Fish Meal as the Major Protein Source in the Diet," by F. G. Whitelaw, T. R. Preston, and G. S. Dawson, Chemical Abstracts, vol. 55, October 16, 1961, 21297a, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"The Value of Menhaden Fish Meal in Practical Broiler Diets," by R. H. Harms, P. W. Waldroup, and C. R. Douglas, article, Poultry Science, vol. 40, November 1961, pp. 1617-1622, printed. Poultry Science Association, Ohio State University, Columbus 10, Ohio.

FISH MEAL AND SOLUBLES:

"Nutritive Element of Fish Meal and Solubles Produced in Various Countries," by Shigeo Murayama and Masaaki Yanase, Chemical Abstracts, vol. 55, May 1, 1961, 8691c, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

FISH MORTALITY:

"A Method of Estimating Mortality Rates From Change in Composition," by Robert H. Lander, article, Journal of the Fisheries Research Board of Canada, vol. 19, no. 1, January 1962, pp. 159-168, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

FISH MUSCLE:

"The Specific Heat and Thermal Conductivity of Fish Muscle," by A. C. Jason and R. A. K. Long, article, Proceedings of the Ninth International Congress on Refrigeration, Paris, 1955, pp. 2, 160-162, 169, printed. Comité du IXe Congrès International du Froid, 177 Blvd. Malesherbes, Paris 17e, France.

"Water Retention of Fish Muscle Paste. II--Effect of pH on the Water-Holding Capacity," by Yutaka Shimizu, Isao Fujita, and Wataru Simidu, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, July 1960, pp. 749-752, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

FISH OILS:

"Preparation of a Coating Material by Chlorination of Fish Oil. X--Change in Melting Point of a Chlorina-

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

tion Product Caused by Irradiation with γ -Rays; XI--Fire-Retardative Effect of a Chlorination Product of Fish Oil on Coating Materials Mixed Therewith; XII--Temperature during Combustion of a Wooden Plate Painted with a Coating Material Containing a Chlorination Product of Fish Oil," by Kosaku Suzuki, articles, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, June 1961, pp. 578-585; and July 1961, pp. 673-677, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Studies on Antimicrobial Action of Oxidized Fish Oil. VI--Relation Between Antimicrobial Action and Copolymerization of Oxidized Oil," by Masamichi Toyomizu, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, May 1961, pp. 446-450, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"On the Yellowtail Oil. III--On the Compound Lipids in Liver," by Hideo Tsuyuki and Uhei Naruse, article, Journal of Japan Oil Chemists' Society, vol. 10, no. 8, 1961, pp. 474-479, printed. Japan Oil Chemists' Society, Department of Applied Chemistry, Faculty of Engineering, University of Tokyo, Moto-fujicho, Bunkyo-ku, Tokyo, Japan.

FISH PRESERVES:

"Preserves Made of Marine Byproducts," by K. A. Barbaianov, article, Rybnoe Khoziaistvo, vol. 35, 1959, pp. 57-61, printed in Russian. VNIRO Glavni-proekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

FISH PROCESSING:

Research in Connection with Processing of Fish on Board (Paper read at Visserij Congres, Scheveningen, Netherlands, 31 May-2 June 1961), by J. van Mameren, printed. Institute for Fishery Products, Haringkade 1, IJmuiden, Netherlands, 1961.

FISH SAMPLING:

"Results of Sampling the Fish Population of an 88-Acre Pond by Electrical, Chemical, and Mechanical Methods," by Albert E. Sanderson, Jr., article, Proceedings of the Fourteenth Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 185-198, printed. Southeastern Association of Game and Fish Commissioners, Columbia, S. C., 1960.

"Toward a Safe and Effective Method of Using Dynamite to Sample Fish Populations and Determine Species Range in Large Rivers," by Robert C. Averett and Robert M. Stubbs, article, Journal of the Tennessee Academy of Science, vol. 37, no. 1, 1962, pp. 20-22, printed. Secretary, Tennessee Academy of Science, Belmont College, Nashville, Tenn.

FISH SCHOOLING:

"The Development of Schooling in Fishes. II," by Evelyn Shaw, article, Physiological Zoology, vol. 34, no. 4, 1961, pp. 263-272, printed. University of Chicago Press, 5750 Ellis Ave., Chicago 37, Ill.

FISH SOLUBLES:

"Isolation and Nature of an Unidentified Growth Factor(s) in Condensed Fish Solubles," by Michael E.

Mason, Jacob Sacks, and E. L. Stephenson, article, Journal of Nutrition, vol. 75, November 1961, pp. 253-264, printed. American Institute of Nutrition, 36th St. at Spruce, Philadelphia 4, Pa.

FISH SPOILAGE:

"The Pseudomonas and Achromobacter Groups of Bacteria in the Spoilage of Marine Whitefish," by J. M. Shewan, G. Hobbs, and W. Hodgkiss, article, Journal of Applied Bacteriology, vol. 23, no. 3, 1960, pp. 463-468, printed. Wallace and Tierman Ltd., Power Rd., London W4, England.

FISH STORAGE:

"Changes in Histological Texture and Additional Freezing Out of Water in Fish Tissue During Storage," by A. I. Piskarev and A. K. Kaminarskaya, article, Kholodil'naya Tekhnika, no. 2, 1962, pp. 34-38, illus., printed in Russian. Kholodil'naya Tekhnika, Four Continent Book Corp., 822 Broadway, New York 3, N. Y.

FISH TRAPS:

"Evaluation of a Wire Fish Trap as a Commercial Fishing Device in Large Impoundments," by A. Leon Kirkland, article, Proceedings of the Fourteenth Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 199-215, printed. Southeastern Association of Game and Fish Commissioners, Columbia, S. C., 1960.

FISHWAYS:

"A Report on the Operation of a Fishway on Lake Bistineau, La.," by Donald W. Geagan and Harry E. Schafer, article, Proceedings of the Fourteenth Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 222-225, printed. Southeastern Association of Game and Fish Commissioners, Columbia, S. C., 1960.

FLORIDA:

A Report of Data Obtained in Florida Straits and Off the West Coast of Florida, January-June 1961, Report No. 62-4, 208 pp., illus., processed. Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla. Contains data collected during 1961 on seven cruises with the R/V Gerda and three cruises with the M/V Green Seas in Florida Straits and the eastern part of the Gulf of Mexico. The data were obtained for studies of the hydrographic conditions prevailing in Florida Straits and adjacent waters, with particular regard to the kinematics of the water movements and also to the physical environment of the shrimp population inhabiting Florida Bay. The tracks of the vessels and the positions at which observations were made are shown in charts. Also includes bathythermograph traces and code tables.

FOOD ADDITIVES:

"Food Additives: A Reference Guide," article, Frosted Food Field, vol. 33, December 1961, pp. 13-14, 16-18, printed. Frosted Food Field, Inc., 321 Broadway, New York 7, N. Y.

FOOD AND AGRICULTURE ORGANIZATION:

Current Bibliography for Aquatic Sciences and Fisheries--Taxonomic Classification, FAO Fisheries Biology Technical Paper No. 12, 90 pp., processed in English, French, and Spanish, limited distribution.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, December 1961. This paper contains a list, in alphabetical order, of generic names occurring in the taxonomic indexes of the Current Bibliography for Aquatic Sciences and Fisheries up to and including volume 5.

FAO Catalogue of Fisheries Publications and Documents, May 1948-1962 (Provisional edition), compiled by Patricia M. Andrews, 56 pp., processed in English, French, and Spanish. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1962. Replaces the previous edition of June 1961. Lists publications and documents issued by FAO, such as FAO Fisheries Papers, FAO Fisheries Study series, and Meeting and Survey Reports; and publications of the Indo-Pacific Fisheries Council, General Fisheries Council for the Mediterranean, European Inland Fisheries Advisory Commission, and Regional Fisheries Commission for Western Africa. Also lists publications issued by permission of FAO and reprints of documents or articles not published by but available from FAO.

The Food and Agriculture Organization has published reports describing that Agency's activities under the Expanded Technical Assistance Program for developing the fisheries of many countries. These reports have not been published on a sales basis, but have been processed only for limited distribution to governments, libraries, and universities. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy.

Rapport au Gouvernement de la Yougoslavie sur L'Ostreiculture et la Mytiliculture (Report to the Government of Yugoslavia on Oyster Culture and Mussel Culture), by Pierre E. Lubet, FAO Report No. 1334, 77 pp., processed in French, 1961.

Report on the Training Centre for Master Fishermen Conducted by the United Arab Republic and the Food and Agriculture Organization of the United Nations at Suez (September 1-October 1960), by P. A. Lusyne, FAO Report No. 1345, 27 pp., illus., processed, 1961.

Rapporto al Governo della Jugoslavia sulla Pesca Marittima (Report to the Government of Yugoslavia on the Marine Fisheries), by Luigi Fausto Farina, FAO Report No. 1367, 23 pp., illus., processed in Italian, 1961.

General Fisheries Council for the Mediterranean, Proceedings and Technical Papers, no. 6, 482 pp., illus., printed in French and English. General Fisheries Council for the Mediterranean, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961. Part I contains a list of the participants and a summary record of the plenary sessions of the sixth session of the GFCM, Rome, September 22-28, 1960. Included is a report of the work programs and recommendations and resolutions of the marine resources, production, utilization, inland waters, and economics and statistics committees. Part II consists of the texts of the technical papers presented in addition to lists of the papers in numerical order and in alphabetical order of authors.

FREEZE-DRYING:

"Freeze-Drying of Foodstuffs," by G. W. Oetjen, article, Journal of Refrigeration, vol. 4, no. 1, 1961, pp. 10-12, illus., printed. Foxlow Publications Ltd., 19 Harcourt St., London W1, England.

"How Freeze-Dried Shrimp are Produced," article, Food Processing, vol. 22, December 1961, pp. 27-31, printed. Food Processing, Putman Publishing Co., 111 E. Delaware Pl., Chicago 11, Ill.

FREEZER-TRAWLER:

"New Freezer-Trawler Zephyros IV," article, Alieia, vol. 16, no. 182, 1962, pp. 59-61, illus., printed in Greek. Alieia, 51 Stadium St., Athens, Greece.

FREEZING:

"Freezing Crabs Afloat," by C. V. Tench, article, Food Manufacture, vol. 36, December 1961, pp. 517-519, printed. Food Manufacture, Leonard Hill, Ltd., Stratford House, 9 Eden St., London NW1, England.

"New Developments in Quick-Freezing," by Graham Kemp, article, Food Manufacture, vol. 36, August 1961, pp. 339-342, printed. Food Manufacture, Leonard Hill Ltd., Stratford House, 9 Eden St., London NW1, England.

"Present Freezing Techniques for Fish," by A. Benezit, article, La Pêche Maritime, vol. 40, no. 999, June 1961, pp. 371-381, illus., printed in French. La Pêche Maritime, 190 Blvd. Haussmann, Paris, France.

Quality Changes in Fish on Freezing, by A. I. Piskarev, Governmental Publication of Books for Trade Requirements, 40 pp., illus., printed in Russian. Four Continent Book Corp., 156 5th Ave., New York 10, N. Y., 1960.

"Ueber das Gefrieren von Seefischen" (On the Freezing of Marine Fish), by J. Gutschmidt, article, Kael-tetechnik, vol. 13, no. 6, 1961, pp. 216-225, illus., printed in German. Verlag C. F. Muller, Karlsruhe, Germany.

FRESH-WATER BIOLOGY:

"Electronics and Freshwater Biology," by W. H. Moore, article, British Communications and Electronics, vol. 7, no. 1, 1960, pp. 20-23, printed. Heywood and Co., Ltd., Drury House, Russell St., London WC2, England.

FRESH-WATER FISH:

"Poissons d'Eau Douce," (Fresh-Water Fishes), by Charles Jacques Spillman, Biological Abstracts, vol. 37, no. 3, 1962, 12182, printed. University of Pennsylvania, 38-5 Walnut St., Philadelphia 4, Pa.

FRESH-WATER IMPOUNDMENTS:

"Effect of Mixing Depth and Turbidity on the Productivity of Fresh-Water Impoundments," by Garth I. Murphy, article, Transactions of the American Fisheries Society, vol. 91, no. 1, 1962, pp. 69-76, printed. Secretary, American Fisheries Society, P. O. Box 483, McLean, Va.

FROZEN FISH:

"Air-Thawing of Sea-Frozen Fish; Dielectric Thawing of Herring and Sea-Frozen Fish," article, Torry Research Station Annual Report, 1960, pp. 21-22, printed. Torry Research Station, Aberdeen, Scotland, 1961.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"Quality of Sea-Frozen Fish," article, Torry Research Station Annual Report, 1960, pp. 17-18, printed. Torry Research Station, Aberdeen, Scotland, 1961.

GEAR:

An Approximate Method for Estimating Trajectories of Cable-Towed Vehicles, by Douglas A. King, IAS Paper No. 62-56, 11 pp., illus., processed, \$1. Institute of the Aerospace Sciences, 2 E. 64th St., New York 21, N. Y., 1962. According to the author, "Adequate relationships exist for predicting such steady-state performance characteristics of cable-towed underwater vehicles as running depth, towing force, and effects of vehicle and cable parameters. The time required to go from one depth to another, ability to follow a sloping sea bottom, and other dynamic performance characteristics are more difficult to predict, primarily because of the dynamic forces on the tow cable." After a brief review of the basic forces acting, there is described a method for calculating the changes in cable forces brought about by descending or ascending velocities of the towed vehicle. Examples are given of dynamic performance characteristics of a hypothetical cable-towed vehicle. It is shown that space trajectories of a winged cable-towed vehicle are essentially independent of towing speed. The method presented is based on some simplifying assumptions regarding the cable shape and the distribution of vertical velocity along the cable. Tests indicate satisfactory prediction of dynamic behavior up to moderately large ratios of running depth to cable length.

"On the Nature of the Selective Fishing Action of Long-line Gear," by Vernon E. Brock, article, Pacific Science, vol. 16, no. 1, 1962, pp. 3-14, printed. Office of Publications, University of Hawaii, Honolulu, Hawaii.

GENERAL:

"Urban Family Expenditures for Fish 1953, 1955 and 1957," by H. C. Frick, article, Trade News, vol. 13, March 1961, pp. 5-18, processed. Information and Educational Service, Department of Fisheries, Ottawa, Canada.

GENERAL AGREEMENT ON TARIFFS AND TRADE:

General Agreement on Tariffs and Trade, Analysis of United States Negotiations, 1960-61 Tariff Conference, Geneva, Switzerland, Department of State Publication 7408, Commercial Policy Series 194, 154 pp., processed, 45 cents. U. S. Department of State, Washington, D. C., July 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.)

GERMAN FEDERAL REPUBLIC:

Berichte der Deutschen Wissenschaftlichen Kommission für Meeresforschung (Transactions of the German Scientific Committee for Sea Research), Neue Folge, Band XVI, Heft 3, 1962, 89 pp., illus., printed in German. E. Schweizerbart'sche Verlagsbuchhandlung (Nagel u. Obermiller), Stuttgart, W. Germany. Contains the following articles: "Vergleichende Untersuchungen an Otolithen von Jungheeringen der Nordsee im Frühjahr 1960" (Comparative Studies of the Otoliths of Small Herring of the North Sea Conducted in the Spring of 1960), by Eva Bohl; and "Biologisch-Statistische Untersuchungen über

die Deutsche Hochseefischerei. IV--Die Entwicklung der Hochseefischerei in Fangtechnischer, Raumlicher und Biologischer Hinsicht. 5--Die Dampferfischerei in der Nordsee" (Biological-Statistical Studies of the German High Sea Fisheries. IV--The Development of the High Sea Fisheries in View of Catching Technique, Capacity, and Biological Considerations. 5--Steamship Fishing in the North Sea), by Johannes Lundbeck.

"The New Fish-Market at Cuxhaven," article, Peche Maritime, Fr. No. 993, December 1960, pp. 779-803, printed. Peche Maritime, 190, Boulevard Haussmann, Paris, France.

GILL NETS:

"The Selection Characteristics of Nylon Gillnets for Tilapia esculenta Graham," by D. J. Garrod, article, Journal du Conseil, vol. 26, 1961, pp. 191-203, illus., printed. Conseil Permanent International pour l'Exploration de la Mer, Charlottenlund-Slot, Denmark.

"The Selection of Clarias mossambicus (Peters) by Nylon Gillnets," by J. A. Gulland and D. Harding, article, Journal du Conseil, vol. 26, 1961, pp. 215-222, illus., printed. Conseil Permanent International pour l'Exploration de la Mer, Charlottenlund-Slot, Denmark.

HADDOCK:

"Torsken och dess vandringsvanor i Östersjön" (The Migrating Habits of Haddock in the Baltic Sea), by Gunnar Otterlind, article, Svenska Vastkustfiskaren, vol. 32, no. 6, March 25, 1962, pp. 124-129, illus., printed in Swedish. Svenska Vastkustfiskarnas Centralforbun, Goteborg, Sweden.

HALIBUT:

"Browning of Frozen Halibut," article, Torry Research Station, Annual Report 1960, pp. 16-17, printed. Torry Research Station, Aberdeen, Scotland, 1961.

The Exploitation, Scientific Investigation and Management of Halibut (HIPPOGLOSSUS STENOLEPIS Schmidt) Stocks on the Pacific Coast of North America in Relation to the Abstention Provisions of the North Pacific Fisheries Convention, International North Pacific Fisheries Commission Bulletin No. 7, 97 pp., illus., printed. International North Pacific Fisheries Commission, 6640 NW. Marine Dr., Vancouver 8, B. C., Canada, 1962. Under the provision of the International Convention for the High Seas Fisheries of the North Pacific Ocean, Japan agrees to abstain from fishing halibut in the Convention area off the coasts of Canada and the United States in which commercial fishing for halibut is being or can be prosecuted. The halibut referred to are defined as those originating along the coast of North America. The purpose of the papers contained in this bulletin was to provide information which would aid the Commission to determine annually, beginning in 1958, whether the halibut stocks in question continued to meet the requirements for abstention given in the Convention. They were submitted to the Commission between 1956 and 1960 by representatives of the Governments of Canada, Japan, and the United States.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

HERRING:

Biological Differences and Similarities Between the White Sea Herring and the Baltic Herring, by N. A. Dmitriev, OTS 61-31039, 9 pp., printed, 50 cents. (Translated from Trudy Vsesoyuznogo nauchno-issledovatel'skogo instituta morskogo rybnogo khoz-yaistva i okeanografii, vol. 34, 1958, pp. 178-184.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1962.

"Canada: Catching Winter Herring," article, *New Scientist*, vol. 12, November 9, 1961, p. 362, printed. *New Scientist*, Harrison, Raison and Co. Ltd., Cromwell House, Fulwood Pl., High Holborn, London WC1, England.

"Chemical Studies on the Herring (*Clupea harengus*). VI--Carbonyl Compounds Formed During the Heat Processing of Herring," by R. B. Hughes, article, *Journal of the Science of Food and Agriculture*, vol. 12, December 1961, pp. 822-826, printed. *Journal of the Science of Food and Agriculture*, Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

"Decline of British Herring Fisheries in the North Sea," by B. B. Parrish, article, *Fishing News International*, vol. 1, January 1962, pp. 42-45, printed. *Fishing News International*, A. J. Heighway Publications, Ltd., Ludgate House, 110 Fleet St., London EC4, England.

"Inhibition of the Denaturation by Salt of Myosin in Baltic Herring," by R. R. Linko and O. E. Nikkila, article, *Journal of Food Science*, vol. 26, November-December 1961, pp. 606-610, printed. Institute of Food Technologists, 510-522 No. Hickory St., Champaign, Ill.

ICED FISH:

"Improvement in Quality of Iced Fish: Fish Hold Design on Trawlers," article, *Annual Report, Torry Research Station*, 1960, p. 10, printed. Torry Research Station, Aberdeen, Scotland, 1961.

INTERNATIONAL COMMISSIONS:

(International Pacific Salmon Fisheries Commission) *Annual Report*, 1961, 43 pp., illus., printed. International Pacific Salmon Fisheries Commission, P. O. Box 1120, New Westminster, B. C., Canada, 1962. Discusses commission meetings held during 1961; 1961 regulations, recommendations for regulations, and emergency amendments governing salmon fisheries in Canada and the United States; fishery, escapement, and rehabilitation of sockeye salmon; and a report on pink salmon. Discusses also results of general research activities throughout the year as well as watershed protection. Includes statistical data on sockeye and pink salmon catch by gear; cyclic landings and packs of sockeye from convention waters; daily catch of sockeye and pinks; escapement of sockeye and pinks to the Fraser River spawning areas; and related data.

"International Whaling Commission Fourteenth Annual Meeting," article, *Norsk Hvalfangst-Tidende* (The Norwegian Whaling Gazette), vol. 51, no. 7, July 1962, pp. 291-293, printed. Hvalfangerforeningen, Sandefjord, Norway. An account of the Fourteenth Meeting

of the International Whaling Commission in London, July 2-6, 1962. Included are discussions of the 1961/62 Antarctic whaling season results, actions taken during the meeting, and financial operations of the Commission. The catch of blue whales will once more be limited to 15,000 units during the 1962/63 season. The length of the open season for Antarctic pelagic whaling will again be from December 12 to April 7.

JAPAN:

Bulletin of the Faculty of Fisheries, Nagasaki University, No. 12, 64 pp., illus., printed in Japanese with English summaries. Faculty of Fisheries, Nagasaki University, Sasebo, Japan, March 1962. Includes, among others, the following articles: "Studies on the Fluctuation in Catch of the Tuna-Fishing Fleet. X--Variability of Hooked-Rates for Tunas and Marlins in the Western South Pacific Ocean during Four Months from August to November 1960," by Shigeyuki Koga; "Studies on the Decree of Fishery-Ground in Meiji," by Shigeshi Aotuka; and "On the Decrease of Hematocrit Value of Fish by the Extraction of Blood," by Osamu Tamura, Tetsuo Fujiki and Kuniomi Eto.

Modern Developments in Japanese Fisheries (Paper read at Visserij Congress, Scheveningen, Netherlands, 31 May-2 June 1961), by N. Fujinami, printed. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961. Describes the fishing industry in Japan. According to the author, the total annual catch is 5,875,000 metric tons which is often eaten raw, requiring that the fish must be strictly fresh. Over the last decade fish consumer habits in Japan have undergone a drastic change and the fishing industry is looking for new products to meet the new requirements (fish sausages). Numerous fishing companies are establishing their own chicken or mink farms so as to be able to use fish offal. The Japanese fishing boats operate wherever fishing can be done profitably, ships operating as far afield as the Atlantic (tuna fisheries). The development of trawlers has in the past few years been strongly stimulated by the operation of stern factory trawlers. This enabled extension of operation from the East and South China Seas to the Atlantic. The author also discusses research, construction of fishing vessels, freezing aboard ship, earnings of Japanese fishermen, and extension of the Japanese market.

LATIN AMERICA:

The Latin American Free Trade Association, TC Publication 60, 23 pp., processed. U. S. Tariff Commission, Washington 25, D. C., July 1962. A digest of the Montevideo Treaty, establishing the Latin American Free-Trade Association. Discusses the nature and objectives of the treaty, its organization and administration, the methods by which the Latin American Free-Trade Area is being developed, and the manner by which additional economic integration is to be achieved by the participating countries. Also includes interpretations of certain provisions of the treaty and gives an account of pertinent regulations adopted by the Contracting Parties since the treaty entered into force on June 1, 1961. Member countries are Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, and Uruguay.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

LIPIDS:

The Lipids of Fish and Changes Occurring in Them During Processing and Storage (Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by J.A. Lovern, 45 pp., processed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

LOBSTER TRAPS:

"Research Boats Test Rock Lobster Traps," article, South African Shipping News and Fishing Industry Review, vol. 15, no. 4, 1960, p. 61, illus., printed. Odhams Press, South Africa, P.O. Box 2598, Cape Town, South Africa Republic.

LOBSTERS:

"A Preliminary Account of the Experimental Rock-Lobster Fishing Conducted Along the South-West Coast of India with Bottom-Set Gill Nets," by R. Balasubramanyam, A. V. V. Satyanarayana, and K.A. Sadanandan, article, Indian Journal of Fisheries, vol. VII, no. 2, October 1960, pp. 407-422, illus., printed. Ministry of Food and Agriculture, Government of India, New Delhi, India.

"Vacuum Packing Lobster Tails Aboard the Lobster Fishing Boat-Freezer," article, La Pêche Maritime, vol. 39, 1960, pp. 156-157, printed in French. La Pêche Maritime, 190 Blvd. Haussmann, Paris, France.

MARINE OILS:

"Fatty Alcohols from Marine Oils and Segregated Esters," by P. M. Jangaard and R. G. Ackman, article, Journal of the Fisheries Research Board of Canada, vol. 18, September 1961, pp. 865-872, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

MARINE SCIENCE:

Prospectus of the Institute of Marine Science, University of Miami, 38 pp., illus., processed. Institute of Marine Science, University of Miami, #1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla., June 1962.

METABOLISM:

"Glucose and Acetate Metabolism in Fish," by P. W. Hochachka, article, Canadian Journal of Biochemistry and Physiology, vol. 39, December 1961, pp. 1937-1941, printed. Division of Administration, The National Research Council, Sussex St., Ottawa, Canada.

MOLLUSKS:

"Polarographic Studies on the Molluscan Meat. IV," by Kiyoshi Fukushima and Ikunosuke Okada, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, February 1961, pp. 171-177, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

MOTHERSHIPS:

"Russian Herring Fishing Mothership," article, Hansa, vol. 97, 1960, p. 784, printed in German. Hansa, C. Schroedter und Co., 10 Stubbenhuk, Hamburg II, Germany.

NETS:

"Certain Problems of the Theory of Fishing with Gill-nets," by N. N. Andreev, article, Trudy VNIRO, vol. 30, 1955, pp. 109-127, printed in Russian. Vsesoiuzny Nauchno-Issledovatel'ski Institut, Morskogo Rybnogo Khoziaistva i Okeanografii, Pishchepromizdat, Moscow, U.S.S.R.

"On the Fatigue of Netting Twine Against Repeated Loads," by Katsuji Honda, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, July 1960, pp. 668-672, printed in Japanese with English abstract. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"On the Suitable Mesh Size on Salmon Gill Nets Inferred from the Relationship between Body Weight of Salmon Caught by Gill Nets and Its Mesh Size," by Kisaburo Taguchi, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, July 1961, pp. 645-649, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"On the Torsional Oscillation of Netting Cords; Torque of Netting Cords Caused by Elongation," by Tadashi Nagata, articles, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, August 1960, pp. 778-782, and vol. 26, September 1960, pp. 868-870, respectively, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

NEW YORK:

"The Sport Fisheries of Great South Bay and Vicinity," by Philip T. Briggs, article, New York Fish and Game Journal, vol. 9, no. 1, 1962, pp. 1-36, printed. New York Conservation Department, Albany, N. Y.

NORWAY:

"Fiskefartoyers Lonnsomhet in 1960, Sesongresultater" (Fishing Vessel Profits in 1960, Season's Results), article, Fiskets Gang, vol. 48, no. 28, July 12, 1962, pp. 385-400, printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

"Rapport fra tokt med F/F G. O. Sars til Vest-Gronland og Island i april-mai 1962" (Report of the Cruise of the G. O. Sars to West Greenland and Iceland in April-May 1962), by Erling Bratberg, article, Fiskets Gang, vol. 48, no. 29, July 19, 1962, pp. 411-412, illus., printed in Norwegian. Fiskets Gang, Fiskeridirektoratet, Radstuplass 10, Bergen, Norway.

NUTRITION:

"Fish in Nutrition," by C. L. Cutting, article, Nature, vol. 192, December 16, 1961, pp. 1013-1015, printed. Nature, St. Martin's Press, Inc., 175 Fifth Ave., New York 10, N. Y.

OCEANOGRAPHY:

"A Program for Automatic Temperature and Depth Calculations of the IBM 650 Computer," by Donald T. Eger, Report 82-3, 49 pp., illus., processed. Marine Laboratory, Institute of Marine Science, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla., 1962. Discusses a program designed to perform

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

automatically all the functions necessary for rapid and accurate temperature, thermometric depth, and wire angle depth calculations in the processing of oceanographic data. The entire program consists of two sections: the actual operating instructions necessary for the calculations and a set of tables which contain all of the required thermometer correction factors. Includes a generalized flow diagram of automatic temperature and depth calculations on the IBM 650 computer, explanation of formulas, data preparations, storage assignment, and discussion of tables. The appendix, which makes up a large portion of the report contains sample stations, program listings, sample tables, and a detailed flow diagram.

OYSTERS:

"Components of Oyster Extract. I--Separation and Quantitative Analysis of Taurine Using Paper Partition Chromatography," by Kimihiko Kono, article, *Yakugaku Kenkyu* (Japanese Journal of Pharmacy and Chemistry), vol. 32, 1960, pp. 860-868, printed in Japanese with English summary. Dept. of Pharmacy, Faculty of Medicine, Osaku University, Osaku, Japan.

"Notes on Shell Morphology, Growth, and Distribution of *Ostrea equestris* Say," by Paul S. Galtsoff and Arthur S. Merrill, article, *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 12, no. 2, June 1962, pp. 234-244, illus., printed, single copy \$2. Institute of Marine Science, University of Miami, #1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla.

"Tritiated Water for Measuring Fluid Transfer in Oysters," by E. A. Fieger, A. F. Novak, and W. T. Burnett Jr., article, *Food Technology*, vol. 16, January 1962, pp. 112-114, printed. Food Technology, The Garrard Press, 510 No. Hickory, Champaign, Ill.

PACIFIC OCEAN:

"Lichinki i Mal'ki Tuntsov, Parusnikov i Mechryby (Thunnidae, Istiophoridae, Xiphiidae) Tsentral'noi i Zapadnoi Chasti Tikhogo Okeana" (Larvae and Fry of Tunny, Sailfish, and Swordfish (Thunnidae, Istiophoridae, Xiphiidae) in the Central and Western Parts of the Pacific Ocean), by C-J Sun, article, *Trudy Instituta Okeanologov Akademii Nauk, SSSR*, vol. 41, 1960, pp. 175-191, printed in Russian. Four Continent Book Corp., 156 5th Ave., New York 10, N. Y.

PILCHARDS:

The Pilchard of South West Africa (SARDINOPS OCELLATA Pappe), The Annual Cycle of Phytoplankton in the Waters off Walvis Bay, 1958, by W. E. Kollmer, Research Report No. 4, 42 pp., illus., printed. Administration of South West Africa, Marine Research Laboratory, Windhoek, South West Africa.

PLAICE:

"The Fecundity of Plaice from the Coasts of Norway," by T. B. Bagenal, article, *Journal of the Marine Biological Association of the United Kingdom*, vol. 42, no. 1, 1962, pp. 105-112, printed. Marine Biological Association of the U. K., Cambridge University Press, 200 Euston Rd., London NW1, England.

PLANKTON:

"Plankton: The Food of Fishes," by D. J. Tranter, article, *Fisheries Newsletter*, vol. 21, no. 7, July 1962, pp. 19-20, illus., printed. Department of Primary Industry, Commonwealth Director of Fisheries, Canberra, Australia. Discusses the marine vegetation of the sea called phytoplankton and the organisms that graze on it. Also discusses the conditions producing large quantities of phytoplankton as well as the possibility of atomic upwelling as a means of creating additional supplies of plankton.

POLLUTION:

"Nature and Extent of Damage Caused by Oil Pollution at Sea," by Alfred L. Hawkes, article, *Transactions of the Twenty-Sixth North American Wildlife and Natural Resources Conference*, pp. 343-355, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C., 1961.

Origin and Treatment of a Supersaturated River Water, by H. H. Harvey and A. C. Cooper, Progress Report No. 9, 22 pp., illus., processed. International Pacific Salmon Fisheries Commission, New Westminster, B. C., Canada, 1962. Summarizes the investigation of a small stream, Corbold Creek, as to the cause of supersaturation of the water. Discusses the stream investigations, methods of water treatment and effects of the supersaturated water on sockeye alevins and fry. Two methods of treatment of supersaturated water are evaluated. A highly effective air-equilibrating tower is described. Also includes a review of European literature on the subject.

Pollution-Caused Fish Kills in 1961, Public Health Service Publication No. 847, 23 pp., printed, 20 cents. Public Health Service, U. S. Department of Health, Education, and Welfare, Washington 25, D. C., 1961. (Available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This is the second annual summary report of pollution-caused fish kills published by the Public Health Service. It includes all reported fish kills for the year 1961, along with statistical tabulations and some interpretative remarks. Discusses the handling of reports, reporting by 45 states, relationship of fish kills to pollution, sources of pollution, cases of exceptionally large fish kills, increase in average size of kills during 1961, evaluation of reporting, and state agencies' comments on the program.

PRESERVATION:

"Experiments on Keeping Quality of Marine Products by Using Antibiotics. III--Alaska Pollack; IV--Further Experiment on Alaska Pollack; V--Stability of Chlortetracycline Permeated into Alaska Pollack Meat; VI--Squid-Meat Preservation," by Tsutomu Uno and others, *Chemical Abstracts*, vol. 55, May 15, 1961, 9713f, 9713g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Investigation of the Acid Preservation of Fish and Fish Offal," by L. L. Lagunov and others, article, *Israel Program of Scientific Translations (PST) Catalogue*, No. 109, 1960, pp. 95-111, illus., printed. (Translated from the Russian *Trudy VNIRO*, vol. 35, 1958, pp. 115-130.) Israel Program of Scientific Translations, 14 Shammal St., Jerusalem, Palestine.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"The Use of Chlortetracycline in Preserving Fish," by G. B. Dubrova and others, Chemical Abstracts, vol. 55, July 24, 1961, 14748d, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

PRESERVATIVES:

"Chemical Preservatives in Foods. IV--Prolongation of the Keeping Quality of Fresh Fish by Antibiotics," by Reino R. Linko, Olavi E. Nikkila, and Jorma J. Laine, Chemical Abstracts, vol. 55, December 25, 1961, 27689g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Studies on the Fish-Components Influencing the Preservatives. I--On the Antagonism of Fish-Musculus to Preservatives," by Yukio Tomiyasu and Noriyuki Enomoto, article, Science Bulletin of the Faculty of Agriculture, Kyushu University, vol. 16, November 15, 1957, pp. 323-328, printed. Librarian, Faculty of Agriculture, Kyushu University, Fukuoka, Japan.

PROTEINS:

Proteins in Fish Muscle (Paper read at FAO International Conference on Fish in Nutrition, Washington, D. C., 19-27 September 1961), by J. W. Jebson, 10 pp., processed in English with French and Spanish abstracts. Fisheries Division, Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, 1961.

"Studies on Mucoprotein in Marine Products. I--Isolation of Mucoprotein from the Meats of *Stichopus japonicus* and *Cucumaria japonica*," by Terushige Motohiro, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, December 1960, pp. 1171-1174, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

PURSE SEINE:

"On the Form and the Tension of Purse Line of a Purse Seine," by Kazumi Ishii and Taneo Konagaya, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, September 1961, pp. 846-849, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

QUALITY:

"Effect of Temperature on Freshness," article, Torry Research Station Annual Report 1960, p. 6, printed. Torry Research Station, Aberdeen, Scotland, 1961.

"The Fish Technologist's Attitude to Food Assessment," by C. L. Cutting and R. Spencer, Torry Misc. Paper No. 16, article, Occupational Psychology, July 1961, pp. 1-6, printed. National Institute of Industrial Psychology, 14 Welbeck St., London W1, England.

"A Rapid Method for the Determination of Moisture in Fish Products," by L. S. Levi'eva, Chemical Abstracts, vol. 54, March 10, 1960, 3778e, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Refractive Index of Eye Fluids for the Estimation of Freshness of Marine Fish," by H. J. Wegner,

article, Archiv fur Lebensmittelhygiene, vol. 11, 1960, pp. 83-84, printed. Verlag M. & H. Schaper Grazer Str. 20, Hannover, Germany.

"Sensory Assessment of Freshness," article, Torry Research Station Annual Report 1960, pp. 5-6, printed. Torry Research Station, Aberdeen, Scotland, 1961.

RADIATION:

Use of Radiations and Radio-Isotopes in Food and Agriculture (List of Research Institutes and Scientists in OECD Member Countries), Documentation in Food and Agriculture No. 46, 96 pp., processed in English and French, 75 cents. Organization for Economic Cooperation and Development, 2 Rue Andre-Pascal, Paris 16, France, December 1961.

RADIOACTIVITY:

"Metabolism of Radionucleotides in Fish. I--Strontium-Calcium Discrimination in Gill Absorption," by Ryushi Ichikawa and Mikio Oguri, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, April 1961, pp. 351-356, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

REACTION OF FISH:

The Reactions of Fish in Concentration Gradients, by Lars B. Hoglund, Research Report No. 43, 147 pp., printed. Fishery Board of Sweden, Institute of Freshwater Research, Drottningholm, Sweden, 1961.

ROE:

"Changes in the Roe During Preparation of Pressed Caviar," by Yu I. Raninskaya, article, Israel Program of Scientific Translations (PST) Catalogue, No. 109, 1960, pp. 66-80, illus., printed. (Translated from the Russian Trudy VNIRO, vol. 35, 1958, pp. 70-83.) Israel Program of Scientific Translations, 14 Shammai St., Jerusalem, Palestine.

SALMON:

"Ability of Salmonids to Ascend High Fishways," by Gerald B. Collins, Joseph R. Gauley, and Carl H. Elling, article, Transactions of the American Fisheries Society, vol. 91, no. 1, 1962, pp. 1-7, printed. Secretary, American Fisheries Society, P. O. Box 483, McLean, Va.

"Anaesthetizing Experiments of Chum Salmon Fry with Tricaine Methanesulfonate (M.S. 222)," by Ei-ichi Sakano, article, Scientific Reports of the Hokkaido Salmon Hatchery, no. 16, pp. 103-106, printed. Hokkaido Salmon Hatchery, Fisheries Agency, Nakanoshima, Outskirt of Sapporo, Hokkaido, Japan, 1961.

"The Antigenic Relationship of Some Salmon," by Sadaaki Koizumi and Isao Hatakeyama, article, Scientific Reports of the Tohoku University, Fourth Ser. Biol., vol. 27, no. 1, 1961, pp. 1-6, printed. Tohoku University, Sendai, Japan.

"The Ascorbic Acid in the Pituitary of the Adult Salmon," by M. Fontaine and J. Leloup-Hatey, article, Bulletin de l'Institut Oceanographique, vol. 1135, 1959, pp. 1-8, printed. Musee Oceanographique (Bulletin), Monaco-Ville, Monaco.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

"K Biologii Molodi Kety v Morskoj Periode e Zhizni" (Biology of Young Chum Salmon During the Marine Period of Their Life), by I. A. Piskunov, article, Izvestia Tikhookeanskogo Nauchno-Issledovatel'skogo, vol. 47, 1959, pp. 186-188, printed in Russian. Izvestia Tikhookeanskogo Nauchno-Issledovatel'skogo, Instituta Rybnogo Khoziaistva i Okeanografii, Vladivostok, U.S.S.R.

"Distribution of the Salmon *Salmo salar* L. in Greenland," by Jorgen Nielsen, article, Meddelelser om Gronland, vol. 159, no. 8, 1961, printed in Danish. Meddelelser om Gronland, C. A. Reitzel, Copenhagen, Denmark.

Downstream Migration of Young Pink Salmon *ONCORHYNCHUS GORBUSCHA* (Walbaum) in the Rivers of Sakhalin, by P. A. Dvinin, OTS 61-31043, 5 pp., printed, 50 cents. (Translated from Zoologicheskii Zhurnal, vol. 38, no. 8, 1959, pp. 1268-1269.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1962.

"Effect of Estradiol Monobenzoate on Some Serum Constituents of Maturing Sockeye Salmon (*Oncorhynchus nerka*)," by F. Chung-Wai Ho and W. E. Vansonté, article, Journal of the Fisheries Research Board of Canada, vol. 18, September 1961, pp. 859-864, printed. Queen's Printer and Controller of Stationery, Ottawa, Canada.

"The Metabolism of Inositol in Salmon. III--The Biochemical Reactions of 2-C¹⁴-Myoinositol in Coho Liver," by H. Tsuyuki and D. R. Idler, article, Canadian Journal of Biochemistry and Physiology, vol. 39, June 1961, pp. 1037-1042, printed. Canadian Journal of Biochemistry and Physiology, Division of Administration, The National Research Council, Sussex St., Ottawa, Canada.

Movement of Salmon in the North Pacific Ocean and Bering Sea as Determined by Tagging, 1956-1958, by Allan C. Hartt, Bulletin No. 6, 166 pp., illus., printed. International North Pacific Fisheries Commission, 6640 NW. Marine Dr., Vancouver 8, B. C., Canada, 1962. This bulletin contains reports from national sources on the results of research on the high seas fisheries of the North Pacific Ocean conducted by research organizations of Canada, Japan, and the United States, member nations of the International North Pacific Fisheries Commission. The program directs its principal attention to salmon, genus *Oncorhynchus*. Discusses fishing gear, fish-handling techniques, tagging procedures, types of tags, evidence of salmon migration routes from seine catches, and conclusions from tag returns and seine catches. Also includes tables on catch, tagging, tag-return, and recovery, as well as specifications of purse seines.

"Novye Dannye o Morskom Periode Zhizni i Morskom Promysle Tikhookeanskikh Lososei" (New Data on the Marine Period of Life and the Ocean Fishery for Pacific Salmon), by I. B. Birman, article, Trudy Soveshchaniia, Ikhtiol. Komissia Akad. Nauk SSSR, vol. 10, 1960, pp. 151-164, printed in Russian. Four Continent Book Corp., 156 5th Ave., New York 10, N. Y.

"Olfactory Perception in Migrating Salmon. II--Studies on a Laboratory Bio-Assay for Homestream Water and Mammalian Repellent," by D. R. Idler and others, article, Canadian Journal of Biochemistry and Physiology, vol. 39, no. 10, 1961, pp. 1575-1584, printed. Division of Administration, National Research Council, Sussex St., Ottawa, Canada.

"Refrigeration of Salmon as the Raw Material for Canning," by Eiichi Tanikawa and Terushige Motohiro, Chemical Abstracts, vol. 55, October 2, 1961, 20256i, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

"Seventh Progress Report on Salmon Diet Experiments," by Duncan K. Law and others, article, Fish Commission of Oregon, vol. 8, no. 1, 1961, pp. 62-70, printed. Fish Commission of Oregon, Portland, Ore.

"Sixth Progress Report on Salmon Diet Experiments," by Russell O. Sinnhuber and others, article, Fish Commission of Oregon, vol. 8, no. 1, 1961, pp. 53-60, printed. Fish Commission of Oregon, Portland, Ore.

"Some Ecological Studies on the Kokanee Salmon *O. nerka* var. *Adonis* in Lake Shikotsu, Hokkaido. I--Frequent Occurrence of Adult Salmon With Abnormal Ovaries in 1956," by Takashi Kurohagi and Shozo Sasaki, article, Scientific Reports of the Hokkaido Salmon Hatchery, no. 16, pp. 137-143, printed. Hokkaido Salmon Hatchery, Fisheries Agency, Nakanoshima, Outskirt of Sapporo, Hokkaido, Japan, 1961.

"Some Observations on the Downstream Chum Salmon Fry, *O. Keta*, Counted in the Natural Spawning Ground at Memu Stream," by Ariaki Nagasawa and Seizo Sano, article, Scientific Reports of the Hokkaido Salmon Hatchery, no. 16, pp. 107-125, printed. Hokkaido Salmon Hatchery, Fisheries Agency, Nakanoshima, Outskirt of Sapporo, Hokkaido, Japan, 1961.

"Spawning and Migration of the Greenland Salmon *Salmo salar* L.," by Jorgen Nielsen, article, Meddelelser om Gronland, vol. 159, no. 8, 1961, printed in Danish. Meddelelser om Gronland, C. A. Reitzel, Copenhagen, Denmark.

"Studies on the Carotenoids of Salmon. III--On the Fading of the Red Color in Canned Salmon (Part 1)," by Tsunetoshi Kanemitsu and Fumio Matsuura, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, May 1961, pp. 453-457, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Studies on the Kokanee Salmon. IV--Spawning Migration of the Kokanee Salmon in Lake Shikotsu, Hokkaido, Japan," by Toshinobu Tokui, article, Scientific Reports of the Hokkaido Salmon Hatchery, no. 16, pp. 127-136, printed. Hokkaido Salmon Hatchery Fisheries Agency, Nakanoshima, Outskirt of Sapporo, Hokkaido, Japan, 1961.

"Water Velocities Tolerated by Spawning Kokanee Salmon," by Glenn E. Delisle, article, California Fish and Game, vol. 48, no. 1, 1962, pp. 77-78,

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

printed. California Department of Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif.

"Zavisimost' Neresta Semgi v Reke Pechore ot Gid-rologicheskikh Uslovii" (Relationship Between the Spawning of the Kamchatka Salmon in the Pechora River and Hydrologic Conditions), by M. I. Vladimirovskaya, article, Voprosy Ikhtiologii, vol. 16, 1960, pp. 111-120, printed in Russian. Voprosy Ikhtiologii, Akademiia Nauk, SSSR, Ikhtiologicheskaya Komissiya, Moscow, U.S.S.R.

SARDINES:

"Optimum Conditions for Production of Canned Fish--Atlantic Sardine in Oil," by A. L. Petelina and S. A. Artiukhova, article, Rybnoe Khoziaistvo, vol. 36, 1960, pp. 57-61, printed in Russian. VNIRO Glavni-proekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

SEEWEEDS:

"The Drying of Seaweeds and Other Plants. IV--Through-Circulation Drying of Chondrus crispus in a Semi-Continuous Dryer," by J. H. Merritt, K. Katsura, and E. Gordon Young, article, Journal of the Science of Food and Agriculture, vol. 12, October 1961, pp. 718-724, printed. Society of Chemical Industry, 14 Belgrave Sq., London SW1, England.

"Quality of Kombu, Edible Seaweeds Belonging to the Laminariaceae. IV--Relation between Quality and Amino Acid Composition of Extractives," by Keiichi Oishi and others, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, June 1961, pp. 601-605, printed in Japanese. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

SEINES:

"Studies on the Configuration of Danish Seine," by Kei Nakasai, Otohiko Suzuki, and Tasae Kawakami, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, July 1961, pp. 641-644, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

SEROLOGY:

Serological Analysis of the Races of the Baikal Omul COREGONUS AUTUMNALIS MIGRATORIUS (Georgi), by D. N. Taliev, OTS 61-11417, 25 pp., illus., printed, 50 cents. (Translated from Trudy Zoologicheskogo Instituta Akademii Nauk SSSR, vol. 6, no. 4, 1941, pp. 68-91.) Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., 1961.

"Serological Techniques in Fishery Research," by Carl J. Sindermann, article, Transactions of the Twenty-Sixth North American Wildlife and Natural Resources Conference, pp. 298-309, printed. Wildlife Management Institute, Wire Bldg., Washington 5, D. C. 1961.

SHARK SKIN:

"Physical Properties of Dogfish Shark Skin Collagen," by Marc S. Lewis and Karl A. Plez, article, Federation Proceedings, vol. 20, Part I, March 1961, p. 380, printed. Federation Proceedings of American Societies for Experimental Biology, 9650 Wisconsin Ave. NW., Washington 14, D. C.

SHELLFISH POISON:

"Paralytic Shellfish Poison. VIII--Some Chemical and Physical Properties of Purified Clam and Mussel Poisons," by Edward J. Schantz and others, article, Canadian Journal of Chemistry, vol. 39, October 1961, pp. 2117-2123, printed. National Research Council, Ottawa 2, Canada.

SHRIMP:

"Industrial Utilization of Red Deep-Sea Shrimp," by P. Hansen, article, Konserves, vol. 18, 1960, pp. 37-42, printed in Danish. Konserves, Det Tekniske Forlag, 29 Vester Farimagsgade, Copenhagen-V, Denmark. Discusses industrial shrimp processing in Denmark. Shrimp are still packed in crushed ice in wooden boxes and landed one or two days after being caught. A piece of equipment continuously grades the catch into (1) large shrimp to be processed by the traditional hand-peeling method (2) medium-size shrimp for machine peeling, and (3) small shrimp which are not processed. The raw shrimp are given a short heat treatment to develop the desired flavor and texture. This article discusses results of recent Danish experiments in the heat treatment of shrimp. An experimental, continuous shrimp boiler of German design is described. Discusses also the peeling of red deep-sea shrimp after heat treatment, as well as the freezing storage, and packaging of boiled peeled shrimp.

SMALL BUSINESS MANAGEMENT:

Sources of Equity and Long-Term Financing for Small Manufacturing Firms, by Harold W. Stevenson, Management Research Summary, 4 pp., processed. Small Business Administration, Washington 25, D. C., June 1962. A summary of a report on relations between the small manufacturing firms and the suppliers of capital in Minnesota. Points out that in raising capital, small firms in urgent need of financing that involves risk should expect investors to insist on some sharing of equity. Discusses the types of firms surveyed and the sources of funds available such as the commercial banker, State Commission, community development organizations, community capital pools, Small Business Administration loans, Small Business Investment Companies, and public offerings of securities.

SPAIN:

"Produccion y Comercio--Nuestro Comercio Exterior Pesquero en cifras" (Commercial Production--Statistics on Our Commercial Foreign Fishery Trade), article, Boletin de Informacion del Sindicato Nacional de la Pesca, no. 44, May 1962, pp. 10-14, printed in Spanish. Sindicato Nacional de la Pesca, 18-20 Paseo del Prado, Madrid, Spain.

SPILLWAYS:

"Escape of Fish Over Spillways; Maryland, 1958-1960," by H. J. Elser, article, Proceedings of the Fourteenth Annual Conference, Southeastern Association of Game and Fish Commissioners, pp. 174-185, printed. Southeastern Association of Game and Fish Commissioners, Columbia, S. C., 1960.

SPINY LOBSTER:

Notes on the Distribution of the Spiny Lobster PANULIRUS in Florida and the Gulf of Mexico, by Donald

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

R. Moore, Contribution No. 343, 2 pp., printed. (Reprinted from *Crustaceana*, vol. 3, part 4, 1962.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Miami 49, Fla.

SQUID:

"Two New Species of Squids of the Genus *Calliteuthis* from the Western Atlantic with a Redescription of *Calliteuthis reversa* Verrill," by Nancy A. Voss and Gilbert L. Voss, article, *Bulletin of Marine Science of the Gulf and Caribbean*, vol. 12, no. 2, June 1962, pp. 169-200, illus., printed, single copy \$2. Institute of Marine Science, University of Miami, #1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla.

SQUID, OCTOPUS, ETC.:

List of the Types and Species of Cephalopods in the Collections of the Academy of Natural Sciences of Philadelphia, by Gilbert L. Voss, Contribution No. 371, 7 pp., printed. (Reprinted from *Notulae Naturae*, no. 356, June 29, 1962.) Marine Laboratory, University of Miami, #1 Rickenbacker Causeway, Virginia Key, Miami 49, Fla.

STEROIDS:

"Steroids in Marine Organisms," by G. A. D. Haslewood, *Chemical Abstracts*, vol. 55, July 10, 1961, 13487g, printed. American Chemical Society, 1155 16th St. NW., Washington, D. C.

ST. PIERRE AND MIQUELON:

"Le frigorifique de Saint-Pierre et la société de pêche et de congélation de Saint-Pierre-et-Miquelon" (The Cold Storage Industry of St. Pierre and the Fishing and Freezing Company of St. Pierre and Miquelon), article, *La Pêche Maritime*, vol. 41, no. 1012, July 1962, pp. 492-496, illus., printed in French. *La Pêche Maritime*, 190, Boulevard Haussmann, Paris, France.

STRIPED BASS:

Racial Status of Juvenile Striped Bass in the Delaware River Estuary, by Donald P. De Sylva, 35 pp., printed. University of Delaware, Department of Biological Sciences, Newark, Del.

SUNFISH:

"Distinguishing the Sunfishes of Pennsylvania (Family--Centrarchidae)," by Keen Buss and Jack Miller, article, *Pennsylvania Angler*, vol. 31, no. 6, June 1962, pp. 6-9, illus., printed. Pennsylvania Fish Commission, South Office Bldg., Harrisburg, Pa.

TAGGING:

"Preliminary Results of Tagging Experiments with Char *Salvelinus alpinus* (L.) in Greenland," by Jorgen Nielson, article, *Meddelelser om Gronland*, vol. 159, no. 8, 1961, printed in Danish. Meddelelser om Gronland, C. A. Reitzel, Copenhagen, Denmark.

"The Two-Sample Capture-Recapture Census When Tagging and Sampling are Stratified," by J. N. Darroch, article, *Biometrika*, vol. 48, parts 3-4, 1961, pp. 241-260, printed. Biometrika Office, University College, London WC1, England

A Winter Steelhead Tagging Program on the Columbia River, by Lawrence Korn, Contribution no. 26, 35 pp., printed. Fish Commission of Oregon, Portland, Oreg., 1961.

TAIWAN:

Taiwan Fisheries Yearbook, 1961 Edition, 187 pp., illus., printed in Chinese and English. Department of Agriculture and Forestry, Taiwan Fisheries Bureau, Provincial Government of Taiwan, Taipei, Taiwan, August 1961. Contains statistical tables on fishermen's organizations and membership, number of fishing vessels, status of ice making and cold-storage industries, fisheries production in quantity and value, and quantity of supply and sale of fishery products and their average value at principal fish markets. Also includes data on processed marine products, fish culture area, production of fish fries, number of casualties of fishermen, losses and damages to fishing crafts, fishing activity at principal fishing harbors, and marine products trade. Most data are for 1960.

TARIFFS:

United States Import Duties Annotated, 594 pp., printed, \$4. U. S. Department of the Treasury, Washington, D. C., July 1, 1962. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) Presents rates of duty for U. S. imports. By commodity classes, lists individual commodities and for each shows full rate, reduced rate and effective date, along with tariff paragraph and reporting numbers. Also gives statistical reporting numbers and commodity descriptions to be used by importers in completing entry and withdrawal forms. Correlates statistical classifications with Tariff Act schedules. Also shows free list, Tariff Act of 1930 (as amended); applicable Internal Revenue Code provisions; supplemental and additional import duties; and special exemptions and restrictions. Alphabetical index of commodities carried in dutiable and free lists. Punched for loose-leaf binder; new pages issued as required.

TOXICITY:

"Some Measurements of Toxicity of Tannery and Textile Wastes and Their Components to Fish by Bio-Assays," by A. David and P. Roy, article, *Indian Journal of Fisheries*, vol. 7, no. 2, 1961, pp. 423-442, printed. Ministry of Food and Agriculture of Government of India, New Delhi, India.

TRANSFER OF FISH AT SEA:

"Transfer of Fish at Sea," article, Torry Research Station, Annual Report 1960, pp. 11-13, printed. Torry Research Station, Aberdeen, Scotland, 1961.

TRANSPORTING FISH:

"Le stockage et le transport du poisson en eau de mer réfrigérée" (Holding and Transportation of Fish in Refrigerated Sea Water), by Jean Deniel, article, *La Pêche Maritime*, vol. 41, no. 1012, July 1962, pp. 531-535, illus., printed in French. *La Pêche Maritime*, 190, Boulevard Haussmann, Paris, France.

TRASH FISH:

"Cull Fish as a Protein Supplement. I--For Growing and Finishing Swine; II--For Finishing Heifers," by S. C. Stothers, article, *Feedstuffs*, vol. 34, January 6, 1962, pp. 46, 48, printed. Feedstuffs, Miller Publishing Co., 2501 Wayzata Blvd., Minneapolis 5, Minn.

TRAWLER-FREEZER:

"The Processing of Sardines and Other Fish on Board BMRT, a Large Size Trawler-Freezer, in Tropical

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Conditions," by Iu. A. Zorzhova, article, *Rybnoe Khoziaistvo*, vol. 36, 1960, pp. 64-68, printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

TRAWLERS:

Fishroom Insulation and Refrigeration--Some Experiences on a Modern Trawler, by J. J. Waterman, Torry Research Report No. 2, printed. Torry Research Station, Aberdeen, Scotland.

"The Lord Nelson--First British Stern Trawler with Deep Freezing," article, *Shipping World*, vol. 145, no. 3544, 1961, pp. 29-32, illus., printed. Shipping World, 127 Cheapside, London EC2, England.

TRAWLING:

"O Rezul'tatakh Rabot po Raznoglubinnomu Tralovmu Lovu a Sudov Tipa SRT" (Results of Midwater Trawling as Practiced by Medium Trawlers), by A. A. Gerbich, article, *Rybnoe Khoziaistvo*, vol. 36, no. 11, 1960, pp. 49-56, illus., printed in Russian. VNIRO Glavniproekta pri Gosplanie SSSR, Moscow, U.S.S.R.

"Visual and Hydroacoustic Observations of Midwater Trawl," by M. D. Truskanov and E. I. Zaitsev, article, *Rybnoe Khoziaistvo*, vol. 35, 1959, pp. 30-34, printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

TRAWL NET:

"Nisobiki Kisen Sokobikiami no Mokei Jikken. I." (Model Experiments on the Japanese Two-Boat-Type Trawl Net. I.), by T. Taniguchi, article, *Journal of the Shimonoseki College of Fisheries*, vol. 10, no. 3, 1961, pp. 355-370, illus., printed in Japanese with English summary. Shimonoseki College of Fisheries, Yoshimi, Shimonoseki, Japan.

TRAWLS:

"On the Comparative Catch Efficiency of Hand-Operated and Winch-Operated Trawls," by S. D. Deshpande, article, *Indian Journal of Fisheries*, vol. VII, no. 2, October 1960, pp. 458-470, illus., printed. Ministry of Food and Agriculture, Government of India, New Delhi, India.

"Results of Hydrodynamic Tests of Trawl Floats," by A. I. Iakovlev, article, *Trudy VNIRO*, vol. 30, 1955, pp. 36-56, printed in Russian. Vsesoiuzny Nauchno-Issledovatel'ski Institut, Morskogo Rybnogo Khoziaistva i Okeanografi, Fishchepromizdat, Moscow, U.S.S.R.

"Sustentateur auto-equilibre de chalut R. L. B." (R. L. B. Self-Balancing Trawl-Net Supporter) article, *La Pêche Maritime*, vol. 41, no. 1012, July 1962, pp. 528-530, illus., printed in French. La Pêche Maritime, 190, Boulevard Haussmann, Paris, France.

TROUT:

"An Ecological Comparison of Six Populations of Brown Trout *Salmo trutta*," by James T. McFadden and Edwin L. Copper, article, *Transactions of the American Fisheries Society*, vol. 91, no. 1, 1962, pp. 53-62, printed. Secretary, American Fisheries Society, P. O. Box 483, McLean, Va.

"Effect of Harvest, Migration, and Stocking on Rainbow Trout Spawning Potential in a Wyoming Lake,"

by John W. Mueller and Louis C. Rockett, article, *Transactions of the American Fisheries Society*, vol. 91, no. 1, 1962, pp. 63-68, printed. Secretary, American Fisheries Society, P. O. Box 483, McLean, Va.

"Fecundity of the Spotted Seatrout *Cynoscion nebulosus* Cuvier from Lake Borgne Area, Louisiana," by Bangalore I. Sundararaj and Royal D. Suttikus, article, *Transactions of the American Fisheries Society*, vol. 91, no. 1, 1962, pp. 64-88, printed. Secretary, American Fisheries Society, P. O. Box 483, McLean, Va.

TUNA:

"Chemical Studies on the Red Muscle (Chai) of Fishes. XII--Oxygen Dissociation Curve of Tuna Myoglobin," by Fumio Matsuura and Kanehisa Hashimoto, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 27, February 1961, pp. 162-165, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Indian Tunas--A Preliminary Review, with a Key for their Identification," by S. Jones and E. G. Silas, article, *Indian Journal of Fisheries*, vol. VII, no. 2, October 1960, pp. 369-393, illus., printed. Ministry of Food and Agriculture, Government of India, New Delhi, India.

"Lipids of the Muscle of Tuna, *Thynnus orientalis*. VII--Distribution of Lipids in Dark-Colored Muscle, Ordinary Muscle, and Several Other Tissues," by Muneo Katada, Koichi Zama, and Hisanao Igarashi, article, *Bulletin of the Japanese Society of Scientific Fisheries*, vol. 26, April 1960, pp. 425-429, printed. (Translated by George Kudo, U. S. Bureau of Commercial Fisheries, Technological Laboratory, Seattle, Wash.) Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Mammoth Purse Seiners, Helicopters Open a New Era in Tuna Fishing," article, *Fish Boat*, vol. 6, November 1961, pp. 22-25, printed. Fish Boat, H. L. Peace Publications, 624 Gravier St., New Orleans, 9, La.

"O Rasprostraneni, Biologii i Promysle Tikhookeanskikh Tuntsov" (Distribution, Biology of, and Fishery for the Pacific Tunas), by V. G. Osipov, article, *Trudy Soveshchaniia, Ikhtiol. Komissii Akad. Nauk SSSR*, vol. 10, 1960, pp. 188-194, printed in Russian. Four Continent Book Corp., 156 5th Ave., New York 10, N. Y.

"Ou en est le Japon dans le domaine de la pêche et du commerce international des thonides?" (Where Does Japan Stand in the Fishery and International Trade for Tuna?), by F. Doumenge, article, *La Pêche Maritime*, vol. 41, no. 1012, July 1962, pp. 504-511, illus., printed in French. La Pêche Maritime, 190, Boulevard Haussmann, Paris, France.

"Purse Seining for Pacific Albacore," by John A. Shaver, article, *California Fish and Game*, vol. 48, January 1962, pp. 81-82, printed. California Department of Fish and Game, 987 Jedsmith Dr., Sacramento 19, Calif.

"On the Quality of Katsuwu-Bushi (Dried Bonito Meat, One of the Popular Seasonings in Japan). I--Methods

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

of Preparing the Stock from Katsuwo-Bushi," by Keiichi Oishi, Yuko Tamura, and Kiichi Murata, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 25, December 1959, pp. 636-638, Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Schooling Intensity of Albacore in South Pacific," by Takeo Ishii and Yoshio Hiyama, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 27, August 1961, pp. 805-812, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

"Studies of Movements of Albacore Fishing Grounds in the Northwest Pacific Ocean. III--Influence of Fluctuations of the Oceanographical Conditions upon the Fishing Grounds of Albacore in the Summer Period and Its Fishery Conditions in the Eastern Waters Off Japan," by Motoo Inoue, article, Bulletin of the Japanese Society of Scientific Fisheries, vol. 26, December 1960, pp. 1152-1161, printed. Japanese Society of Scientific Fisheries, 6-chome, Shiba-Kaigandori, Minato-Ku, Tokyo, Japan.

A World List of Experts Concerned With the Study of the Biology of Tunas and Related Species, FAO Fisheries Biology Technical Paper No. 10, 27 pp., processed, distribution restricted. Food and Agriculture Organization of the United Nations, Viale delle Terme di Caracalla, Rome, Italy, April 1962. This is one of a series of technical papers in which are listed the names and addresses of persons known to FAO to be conducting research on, or interested in, a particular subject within the general field of aquatic sciences and fisheries research. This document, a revision of a first draft (FB/T 10 issued in February 1961), contains names of persons interested in tuna and related species. Includes also geographic, language, subject, and taxonomic indexes.

TURKEY:

Balik ve Balıkçılık (Fish and Fishery), vol. 10, no. 1-2, January-February 1962, 32 pp., illus., printed in Turkish with English table of contents. Balıkçılık Mudurlugu, Besiktas, Istanbul, Turkey. Includes, among others, the following articles: "The Most Precious Sea Product: Caviar;" "The 1961 Exports of Sea Products and Fish Products;" "The Production of Sea Products in Turkey;" and "The 1961 Production and Export of Sponge in Turkey."

U.S.S.R.:

"O Neobkhdimosti Biologicheskogo Obosnovaniya Minimal'Nyk Promyslovyykh Razmerov Na Ryb, Dopuskaemykh K Vylovu Po Pravilam Rybylovstva" (The Necessity for a Biological Basis for the Minimal Commercial Size of Fish Allowed to be Caught in Accordance With Fishing Laws), by L. S. Berdichevskii, article, Rybnoe Khoziaistvo, vol. 9, 1960, pp. 23-27, printed in Russian. VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

"Puti Uluchsheniya Uslovii Razmnozheniya Ryb v Del'te Volgi" (Ways of Improving the Conditions for the Multiplication of Fish in the Volga Delta), by V. Y. Goremykin, article, Rybnoe Khoziaistvo, vol. 10, 1960, pp. 17-20, printed in Russian. Rybnoe Khoziaistvo, VNIRO Glavniproekta, pri Gosplanie SSSR, Moscow, U.S.S.R.

VESELS:

"Zagadnienie Szybkosci Dalekomorskich Statkow Rybackich" (The Problem of Speed for Deep-Sea Fishing Boats), by D. Bogucki and J. Swiecicki, article, Budownictwo Okretowe, vol. 6, no. 2, 1961, pp. 47-50, illus., printed in Polish with English summary. Wydawnictwa Czasopism Technicznych NOT, 3/5 Czackiego, Warsaw, Poland.

VITAMINS:

"Loss of Vitamin B₁ in Raw Fish and Pork by Cooking," by Noriko Arima and others, Chemical Abstracts, vol. 55, September 18, 1961, 19059f, printed. American Chemical Society, 1155 16th St. NW., Washington, D.C.

"Vitamin B Content in Tissue of Red Salmon," by Shigeo Murayama, Masaaki Yanase, and Kikuko Tabei, article, Tokaiku Suisan Kenkyusho Kenkyu Hokoku (Bulletin of Tokai Regional Fisheries Research Laboratory), no. 25, 1959, pp. 67-79, printed. Tokaiku Senkyujo, 12-2, Tsukushima Hishigashi-dori, Chuo-ku, Tokyo, Japan.

WASHINGTON:

Washington State Department of Fisheries, 1960 Annual Report, 232 pp., illus., printed. Washington State Department of Fisheries, 4015 20th Ave. W., Seattle 99, Wash., 1961. Includes information on the activities of the Department of Fisheries during 1960 in the fields of pollution, fish farming, water management, fish disease investigations, and fisheries law enforcement. Sections are also included on otter trawling, troll salmon tagging, the Columbia River Fisheries, coastal investigations, chinook escapement, effects of seismic tests on fish life, and power dam studies. Specialized problems are dealt with in chapters on the razor clam fishery, Japanese seed oyster export program, coastal pink shrimp fishery, and oyster reproduction. A considerable portion of the report is devoted to the 1960 fisheries statistical report containing data on commercial landings and fishway counts.

WEST INDIES:

"Fisheries Development in the West Indies, 1960-1961," by Ernest Hess, article, West Indies Fisheries Bulletin, no. 1, January/February 1962, pp. 1-14, processed. Ministry of Natural Resources and Agriculture, Federal House, Port-of-Spain, Trinidad, W. I. Discusses work done in marine and freshwater fisheries, fishing craft and gear, major fishing operations, handling and processing of fish, and marketing and exports. Discusses also fisheries education and training, aid and technical assistance, organization of fishermen, as well as special problems and major needs of the industry.

WHALES:

"Whale Observation and Whale Marking off the Coast of Chile in 1958 and from Ecuador Towards and Beyond the Galapagos Islands in 1959," by Robert Clarke, article, Norsk Hvalfangst-Tidende (The Norwegian Whaling Gazette), vol. 51, no. 7, July 1962, pp. 265-280, 283-284, 286-287, illus., printed. Hvalfangerforeningen, Sandefjord, Norway.

WHALING:

"Participation, Production and Price Conditions in the Small-Whale Fisheries 1938-1960," by J. L.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE ORGANIZATION ISSUING THEM.

Holm, article, *Norsk Hvalfangst-Tidende* (The Norwegian Whaling Gazette), vol. 51, no. 6, June 1962, pp. 225-240, 242, 244, 246, 249, illus., printed in Norwegian and English. Hvalfangerforeningen, Sandefjord, Norway. Discusses prices, production, and participation in the Norwegian small whale fisheries during the periods 1938-1947, 1948-1953, and 1954-1960. In 1949 concessions were granted to 384 whalers and the production of whale meat became so large that steps had to be taken to restrict the number of concessions. The number of concessions issued was gradually reduced and stabilized at about 200 per annum since 1954. The whaling season was restricted to 6 months a year beginning in 1952. In 1955, regulations provided that the taking of small whales in waters north of 70° N. latitude should terminate June 30. Since the shore stations' production declined after 1952, the small-whale fishermen have increased their whaling intensity, so that the average annual production of

the two combined has remained at about 6,400 tons of whale meat. The wholesale price of little piked whale meat had a regulative influence on the total production of whale meat between 1949 and 1957. Since 1958 the wholesale prices have risen unusually high, while the production has been below the average.

WORLD TRADE:

"World Export Regulations," article, *International Commerce*, vol. 68, no. 3, July 2, 1962, pp. 8-11, printed, single copy 35 cents. Bureau of International Programs, U. S. Department of Commerce, Washington 25, D. C. (For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.) This tabulation of the import and exchange permit requirements of foreign countries was prepared as an aid to exporters. The regulations apply primarily to goods of United States origin and to other goods payable in United States dollars. This list was revised as of June 1, 1962.



FISH CURING ON NORTH AMERICAN NORTH ATLANTIC COAST DATES BACK TO 1500

"The fish-curing industry of the North Atlantic coast of North America dates back at least to the year 1500. There are authentic records of fish-curing activities as of that period, and legends of activities at much earlier date. An extensive fish-curing industry along the North Atlantic coast of North America was carried on for more than one hundred years before there was any permanent settlement. As early as the year 1580 more than 300 ships from Europe were salting cod in this area. Newfoundland, 'the oldest British colony,' owes its origin to the fish-curing industry which is still the dominant factor in the economic life of that country."

--*Principles and Methods in the Canning of Fishery Products*, Research Report No. 18 (page 2), U. S. Fish and Wildlife Service

Editorial Assistant--Ruth V. Keefe

Compositors--Jean Zalevsky, Alma Greene, Helen Paretti, and Raie Carron

Photograph Credits: Page by page, the following list gives the source or photographer for each photograph in this issue. Photographs on pages not mentioned were obtained from the Service's file and the photographers are unknown.

Cover, pp. 12, 13, 14, & 15--A. C. Jensen, Woods Hole, Mass.; p. 17--V. L. Fortin, Juneau, Alaska; pp. 28, 29, 42, & 52--F. B. Sanford and C. F. Lee; p. 37--Coast and Geodetic Survey; p. 48--New Bedford Standard Times; p. 64, fig. 2--Royal Danish Ministry of Foreign Affairs; p. 78--Consulate General of Japan, N. Y.

1-

l-
e,
rt
-
eser
m

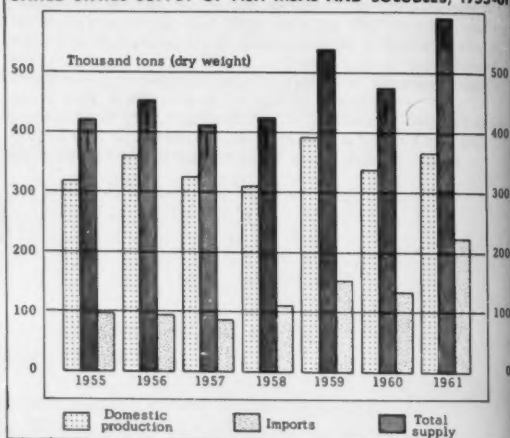
INDUSTRIAL FISHERY PRODUCTS - 1961

C. F. S. 2863, Industrial Fishery Products - 1961 (An Annual Summary), shows the production of industrial fishery products by 170 plants in the United States, American Samoa, and Puerto Rico in 1961 was valued at \$74.5 million to the processors.

The 1961 production of fish scrap and meal amounted to 311,000 tons valued at \$32 million to the processors. This was 21,000 tons more than in 1960 and exceeded the previous record established in 1959 by nearly 5,000 tons. Menhaden meal accounted for 80 percent of the total production of fish meal.



UNITED STATES SUPPLY OF FISH MEAL AND SOLUBLES, 1955-61



Production of fish and fish-liver oils in the United States and Puerto Rico totaled nearly 35 million gallons. The production was 23 percent above that of 1960 but below the record 40 million gallons produced in 1936. Menhaden oil established a new record and accounted for 91 percent of the 1961 production.

The yield, during 1961, of homogenized condensed fish (nearly 12,000 tons) was about 2,000 tons above that of the previous year. Production of fish solubles (100,000 tons) was about 10,000 tons larger than in 1960.

Copies of C. F. S. No. 2863 are available free from the Office of Information, U. S. Fish and Wildlife Service, Washington 25, D. C.

he
an

61

00

00

00

00

00

0

ly
rd
ed

ut
as

sh

ve